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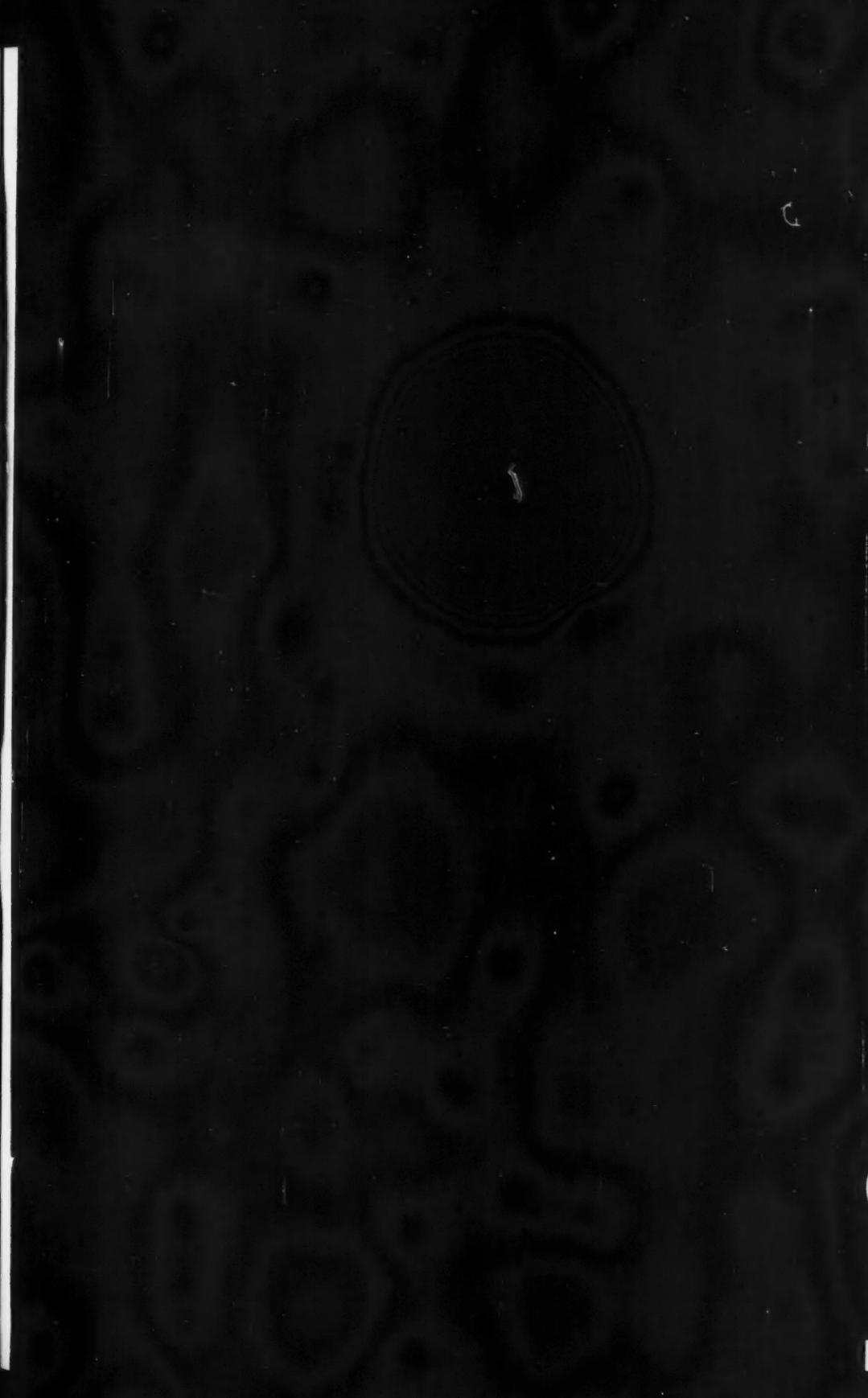
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Observations on the Use of Antigens¹

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ENVIRONMENTAL factors have long been prominent in the epidemiological consideration of disease. From Jenner's observation on the immunity of the milkmaid to smallpox, down through Snow's discernment of the community water supply in the dissemination of cholera, Reed's identification of the part played by the mosquito in yellow fever, to the current investigation into the role of nutrition in atherosclerosis or cigarette smoking and other atmospheric pollutants in lung cancer, we are constantly reminded of such factors. Man, of course, with his ingenuity has been able to alter many facets of his environment when such have been established as contributing factors in the cause of a particular disease. The science of immunology and its application as a preventive force have also played their parts in man's adaptation to existing or changing conditions of environment.

Diphtheria, a scourge not many years ago, occurs with diminishing frequency in Canada and in most communities it is now a rare disease. This enviable record is due to the application and efficacy of diphtheria toxoid. Perhaps what is more significant has been the virtual disappearance of the *Corynebacterium diphtheriae* from the noses and throats of the population where this antigen has been extensively and continuously used. A number present today co-operated with the late Dr. Donald Fraser in a survey which brought this fact to light. Recent communicable disease notes in the British literature (1) record an outbreak of diphtheria in the London area of a sub-clinical nature with many being carriers. We must be ever mindful that no matter what our situation is with respect to a particular communicable disease the situation may be different elsewhere.

¹Presented at the tenth annual meeting, Ontario Public Health Association, Sept. 28-30, 1959, Toronto, Ont.

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We may well think of the effect of modern transportation whereby any two points on earth are not more than a few hours apart. Transfer of communicable diseases is a threat that is ever challenging. How simply may a visitor or an immigrant introduce diphtheria into a community. What if the immunity status of that community is not adequate? The maintenance of immunity through the use of reinforcing or booster doses is imperative. Immunization in infancy is not sufficient for life, and this statement may well be applied to all immunizing agents. The recent experience of Winnipeg and Detroit with diphtheria illustrates the need to attain and maintain an adequate immune status.

The possible occurrence of reactions in the administration of diphtheria toxoid presents a problem. Reactions are observed in individuals who have become sensitive to the protein of the diphtheria bacillus. The age of the individual seems to be a determining factor as reactions are seldom noted in children under high school age. In overcoming this problem a specially diluted preparation is used in the primary immunization of reactors. For reinforcing purposes a dosage schedule is employed which diminishes in quantity with the age of the child. In the preparation of combined TABTD a reduction in the diphtheria Lf. content is made and this has proved effective because of the adjuvant effect of the typhoid paratyphoid antigen. Further, purification of the toxoid reduces the non-toxoid protein content and minimizes reaction.

In a number of countries it was observed that the incidence of poliomyelitis was higher among persons who had received antigens containing alum or other mineral adjuvants when administered by the intramuscular route. The occurrence of paralysis in the inoculated limb was observed. The observations related to the occurrence of poliomyelitis within 30 days of inoculation. Fortunately, this association has not been encountered in Canada and it is believed that this favourable situation has been due to the almost exclusive use of fluid formal toxoids and the use of the subcutaneous route (2, 3).

Tetanus is a very serious disease with a high case fatality rate. Fortunately, it is not a common disease in Canada. Tetanus bacilli are found in the intestinal tract of man as well as the horse. Tetanus has been implicated in cases of septic abortion, a fact brought out by the local branch of a committee on maternal welfare of the Ontario Medical Association from its investigations of maternal deaths in Toronto.

In the prophylactic treatment a rather serious situation has developed from the widespread and repeated use of tetanus antitoxin administered at the time of an accident. A significant proportion of the population is becoming sensitized to horse serum as a result of this use, and reactions are being observed with increasing frequency, a number of them being serious.

Tetanus toxoid is a very efficient antigen (4), and active immunization of the population is urged. Since the war, it has been combined with and administered with the usual children's antigens, and has also been used singly in industry. It is now available combined with poliomyelitis vaccine. Active immunization with tetanus toxoid affords protection in all situations, against the insignificant injury which may still permit the entry of infection and for

which the individual is not likely to seek medical attention, and against the major injury when a booster dose of tetanus toxoid may be administered, thus avoiding the risks inherent in the use of tetanus antitoxin.

Pertussis vaccine has for many years been included in the armament of preventive medicine. Its part in the reduction of mortality from whooping cough is beyond doubt, studies having established that mortality is practically nil among those adequately immunized (5). The comprehensive studies of the British Medical Research Council (6, 7, 8) have shown a high degree of protection being afforded by the vaccine against the disease. It must be remembered, however, that some immunized children will contract the disease, usually in a milder form. The Connaught Laboratories preparing the vaccine which we customarily use maintain a close watch on the antigenic properties of the vaccine and add or substitute appropriate freshly-isolated strains of the organism. Complications arising from the use of this vaccine are not numerous; however, a child to be vaccinated which has a history of convulsions should be considered with extreme caution.

Poliomyelitis, as we know it, presents a very good example of the relationship between environment and a communicable disease, and of the influence of a changing environment on the natural history of a disease. Improvement in sanitary measures, while protecting our population from a host of enteric diseases, has deprived it of the chance to acquire naturally protection against poliomyelitis in the very early years of life. The Salk-type poliomyelitis vaccine now, however, provides us with a means of control. The degree of effectiveness of this vaccine has been established in field trials, and even during outbreaks of the disease. The epoch-making Francis Report of 1955 (9) has been followed by many scientific papers. The vaccine has been singularly innocuous and free of complications. It is of interest to note that vaccine prepared by the Connaught Medical Research Laboratories contains no penicillin.

MacLeod and his co-workers in the Connaught Medical Research Laboratories recently reported on extensive studies of the antibody count in persons after various vaccination schedules and at different ages. A high rate of response followed initial vaccination with two doses in children and adults. After the booster dose (i.e., third dose) *all* children developed antibodies of all three types. Satisfactory levels were present in children 18 months after the booster dose. Further and yet unpublished data indicate satisfactory levels remaining approximately 3 years after the booster dose. The response to a second dose when given seven or ten months after the first was as good as when given one month after the first. If an interval of some months occurs between the first and second dose, inoculation may be continued as if there had been no delay. The secondary response phase begins within four weeks and develops markedly during the second month after the primary stimulus. It is recommended that the second dose be given not less than four weeks after the first dose; the third dose not less than four weeks after the second, preferably longer but before the next poliomyelitis season. In other words, it is not necessary to wait for the lapse of seven months before the administration of the third dose. Infants 3 to 12 months of age at the time of initial vaccination did not respond as well as other children, but the differences

were not great. Infants given three doses of vaccine a month apart responded satisfactorily.

We have heard and read much about a live oral poliomyelitis vaccine prepared from attenuated strains of the virus. Significant advances have been made in its development and field trial, but its place in our community, our environment, is still to be determined. The report of the Surgeon-General of the United States Public Health Service (11) in recent months advises of areas of doubt which still need clarification. Here, for the first time, the immunologist has an agent over which he cannot maintain control, nor for that matter, can anyone. Within a few days after the introduction of this vaccine by spray into the back of the throat or by capsule into the gastrointestinal tract, the virus is excreted in the stool, and is also recoverable from throat washings in the former case. A rapid dissemination of the virus in contacts and the population may then be expected by the very same channels that poliomyelitis spreads. Provided the particular strains of viruses remain attenuated we have nothing to fear. If mutants occur and/or virulence is regained, significant problems may be expected to develop.

In the use of the latest antigens which include poliomyelitis vaccine in combination, there have been reports of local and general reactions due to the use of these antigens for purposes other than those intended. No doubt, discomfort of a different kind than that experienced by the patient is ultimately felt by the physician also in these instances! The so-called quadruple antigen, Diphtheria and Tetanus Toxoids combined with Pertussis and Poliomyelitis Vaccines, is intended for use with infants and pre-school age children. It is *not* to be used for the immunization of adults or older children. The first dose of DPT Polio vaccine should not be reduced in infants under six months, in order not to diminish the volume of the type I poliovirus component (12).

Diphtheria and Tetanus Toxoids combined with Poliomyelitis Vaccine have been especially formulated for the purpose of *reinforcing* the immunity of school age children. This preparation is not intended and is not adequate for the primary immunization of any age group.

Tetanus Toxoid and Poliomyelitis Vaccine (combined) is an ideal preparation for use in adults, either for primary immunization or reinforcing purposes. This preparation has not been misapplied and has been enthusiastically received by industrial physicians in particular.

Serious epidemics of smallpox have occurred in recent years in Pakistan and India. The endemic distribution of this disease remains unaltered. Sporadic outbreaks have occurred in Germany and the United Kingdom with air travel being featured in its spread. Vigilance in this country has not slackened and smallpox vaccination still holds a strong place in immunization programs. There is still a tendency for a number of physicians in practice to recommend postponement of this procedure until school age, but there is no justification for this. Hyperimmune vaccinia serum or gamma globulin has shown definite promise in Europe in the management of the several cutaneous post-vaccinia complications, grouped under the general heading of generalized vaccinia (13).

We, in Ontario during the past three years, have witnessed a change in an environmental disease with the introduction and apparent establishment of

rabies in the wild-life of the province. With transmission of this disease to domestic animals significant problems have been presented to our veterinary colleagues. The utilization of a living attenuated vaccine, primarily in household pets, no doubt has contributed to the control of the disease. Nevertheless numerous persons were exposed to infected animals, particularly cattle. Medical officers of health were regularly consulted with respect to the use of rabies vaccine (modified Semple type) in human contacts of infected or suspected infected animals, and were generally guided by the recommendations of the Special Committee on Rabies of the World Health Organization with respect to the immunization of contacts. Each situation, however, demanded a careful weighing of the risks inherent in the use of the vaccine and the degree of exposure. Fortunately, no human cases of the disease have occurred and only 3 cases of severe reaction have been reported in over 2,500 vaccinated individuals during the past three years in Ontario. Hyperimmune serum has had only a very limited use in this province.

Although one might discuss antigens which we use less frequently as, for example, typhoid vaccine, and influenza vaccine, I will speak of significant advances in virus research. The 'golden age' of virology is here. The development of new techniques in recent years has simplified and hastened the isolation of viruses. On the one hand, viral agents are being demonstrated as the cause of newly recognized and of older diseases; on the other hand, viral agents, such as the "orphan" viruses, have been isolated and a search is being made for diseases with which to link them.

Almost as quickly as these agents are being isolated, attempts to develop effective vaccines from them are being made. Already 'shot-gun' vaccines incorporating several of them have been advocated. But is there need for this haste? The wide-spread and indiscriminate use of antibiotics, the 'shot-gun' treatment of infection and even prevention of infection, has created considerable and significant problems. Present-day multiple antigens were not offered until the individual components had proved themselves in years of field trial.

Already a vaccine made from the adenoviruses has been offered and has indicated a measure of success. Although it no doubt will be of value for use in the Armed Forces, is it necessary for civilian use? We hear of the steps which have been made in producing a measles vaccine. At present, man's immunity to measles is derived by an attack of the disease; although measles predisposes to certain complications, anti-measles serum properly and skillfully administered can be counted on to protect those exposed to infection, particularly the very young, and the debilitated. All of us are familiar with the clinical pictures presented by adults who have eventually contracted the "childhood diseases". How effective will these vaccines be? What will be the duration of immunity which they stimulate? How frequently will booster doses be needed? You and I know full well the difficulties and the apathy to be overcome in immunizing adults. Might not measles, or any other childhood disease for which vaccines are developed, become adult diseases where the risk of complication and economic loss are greater? One might also question whether such diseases are serious enough in terms of morbidity, dis-

ability or mortality to warrant vaccination, which of course means repeated vaccination, unless a lifelong immunity can be conferred by primary immunization, and as I mentioned earlier, this has never been established in man's experience with any antigen.

We, as medical health officers, pride ourselves in the knowledge that we hold concerning the community. Various antigens have aided us in our management of some of the ills which have beset its members. Discovery, without application, has but little value. Through the continued co-operation of health officer and research worker, the health of the total community, the public health, will continue to improve and the changes in environment will all be changes for the better.

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of this issue.

Assay of Diphtheria and Tetanus Antitoxins in Small Volumes of Blood

E. M. TAYLOR,¹ O.B.E., M.A., Ph.D., and
P. J. MOLONEY,¹ O.B.E., M.A., Ph.D., F.R.S.C.

IT is often desirable and especially in the case of infants to be able to estimate diphtheria and tetanus antitoxins in small amounts of blood. To this end the procedure which is described here was developed. For the estimation of either diphtheria or tetanus antitoxin a minimum of 0.1 ml of whole blood is required. With this volume of blood the lower limits of antitoxin which can be estimated are for diphtheria antitoxin and for tetanus antitoxin in the order of 0.02 u/ml serum.

TECHNIQUE

In brief the steps of the procedure are as follows:

A measured amount of whole blood is mixed with a definite volume of a suitable diluent and the antitoxin content of the cell-free dilution is determined. Diphtheria antitoxin is assayed by animal skin-test method and tetanus antitoxin by a modification of the mouse method.

Materials

Diluent for blood: The diluent is modified Alsever-Ainslie solution (1) of the following composition: glucose 2.05 g., sodium citrate 0.16 g., sodium chloride 0.5 g. dissolved in water to a final volume of 100 ml, pH adjusted to approximately 6.1. The solution is sterilized by autoclaving after which merthiolate is added to the cooled solution to a concentration of 0.005% (0.5 ml of pasteurized solution of merthiolate (10%) per 100 ml solution). The diluent is dispensed into wide mouth screw-capped vials (4.5 cm high, 1.2 cm in diameter); 1.8 ml for 0.2 ml blood, 0.9 ml for 0.1 ml blood.

Buffered saline-gelatine: One volume of phosphate buffer (M/15 Na₂HPO₄-HCl, pH 7.2) is combined with 2 volumes of 0.85% (w/v) NaCl; gelatine is added to a concentration of 0.1% and merthiolate to 0.005%.

Diphtheria toxin and tetanus toxin: Crude broth filtrates.

Standard antitoxins: Diphtheria and tetanus.

Syringes: 1 ml all glass graduated in 0.1 ml; needles, 26 gauge, 12 mm.

DETAILS OF THE PROCEDURE

A volume of 0.2 ml of blood is required if tetanus and diphtheria antitoxins are both to be estimated. If it is not convenient to obtain blood by venipuncture it can be taken as is done for small amounts of blood required for the determination of glucose etc., namely by puncturing with a stilette the skin of a

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suitable area (the heel in the case of an infant) and allowing the blood to flow directly into a 0.2 ml pipette. The measured volume of blood (0.2 ml) is at once mixed with 1.8 ml of diluent for blood. The diluted blood, contained in a screw-capped vial, is removed to a refrigerator (5 to 10°C) where the vial is left standing upright overnight. After this period of storage the clear supernatant is removed by means of a Pasteur-Wright pipette (glass tubing approx. 100 mm in length, 7 mm in diameter with drawn out tip) fitted with a rubber bulb. Usually 1.8 ml of clear supernatant fluid can be drawn off. In some instances it may be convenient to centrifuge before removing the supernatant.

TITRATION OF DIPHTHERIA ANTITOXIN

The diphtheria antitoxin in the supernatant fluid is determined by the rabbit skin-test method (2, 3, 4, 5, 6). The following are details of the method as applied in this laboratory.

Standard diphtheria antitoxin is diluted with the buffered saline-gelatine to give the following units per ml: 0.0005, 0.00075, 0.001, 0.0015, 0.002. A dilution of diphtheria toxin in buffered saline-gelatine is made of such strength that it is neutralized by an equal volume of antitoxin 0.001 u/ml but not by antitoxin 0.00075 u/ml. Hence, if mixtures of equal volumes of diluted toxin and standard antitoxin are prepared and if 0.2 ml of each mixture is injected into the skin of a rabbit, when readings are made on the third day, there should be reactions at the site of the mixtures containing antitoxin 0.0005 and 0.00075 u/ml but not in mixtures containing antitoxin 0.001, 0.0015 and 0.002 u/ml.

In a test of an unknown, the supernatant of the diluted sample and further dilutions of this, are mixed with an equal volume of diluted toxin and 0.2 ml of each mixture is injected intradermally into the skin of two rabbits. At the same time mixtures of diluted toxin and standard antitoxin, as indicated above, are also injected intradermally into the same rabbits. Readings are made on the third day.

Interpretation of results is shown by the following example.

The supernatant of the diluted blood specimen (1/10 dilution of blood, approx. 1/20 dilution of serum) is diluted, 0.1 ml plus 0.4 ml buffered saline-gelatine (1/100 dilution serum); the 1/100 dilution is further diluted 0.1 ml plus 0.4 ml buffered saline-gelatine (1/500 dilution serum). 0.4 ml of each of the three dilutions is mixed with 0.4 ml of diluted toxin and 0.2 ml amounts of each mixture are injected intradermally into the skin of the back of 2 rabbits from which the hair has been removed (conveniently by electric clippers). On the same rabbits there are also injected intradermally 0.2 ml amounts of each of the 5 mixtures of toxin and standard antitoxin (0.0005, 0.00075, 0.001, 0.0015 and 0.002 u/ml). On the third day the readings at the site of the toxin-standard antitoxin reactions should be for the mixtures containing antitoxin 0.0005 and 0.00075 u/ml, areas of redness in the order of 20 mm and 15 mm in diameter respectively and no reactions at the site of the other mixtures.

The possible reactions at the sites of the 3 dilutions of blood which is being assayed are:

Reactions at all three sites: hence 1/20 dilution of serum contains less than 0.001 u/ml tetanus antitoxin or the undiluted blood serum less than 0.02 u/ml.

No reactions at the site of any of the three mixtures: hence 1/500 dilution contains 0.001 u/ml or more, or the undiluted serum 0.5 u/ml or more.

No reaction at the 1/20 dilution but reactions at the 1/100 or 1/500 dilutions: hence the antitoxin content of the undiluted blood serum is between 0.02 and 0.1 u/ml.

No reactions at the 1/20 and 1/100 dilutions, reactions at the 1/500: hence the antitoxin content of the undiluted serum is between 0.1 and 0.5 u/ml.

TITRATION OF TETANUS ANTITOXIN

The method of titration is a variant of that described by Chen *et al.* (7) and depends on the fact that tetanus toxin when injected intramuscularly in small amounts into the upper part of a hind leg of a mouse induces paralysis in the injected leg. The state of paralysis is readily detected when the mouse walks.

Toxin is diluted so that when mixed in equal volume with standard antitoxin it is neutralized by antitoxin 0.001 u/ml but not by antitoxin 0.0005 u/ml; that is when 0.5 ml amounts of mixtures of diluted toxin and equal volumes of standard antitoxin 0.00012, 0.00025, 0.0005, 0.001, 0.002 and 0.004 u/ml, are injected into the hind leg of a mouse, paralysis of the injected leg or paralysis and death will occur in the mice receiving the mixtures containing standard antitoxin 0.00012, 0.00025 and 0.0005 u/ml but not in mice receiving mixtures containing 0.001, 0.002 and 0.004 u/ml antitoxin. It is not necessary that the dilution of toxin be such that the neutral mixture be that containing antitoxin 0.001 u/ml. It can be for example that which contains antitoxin 0.0005 or 0.00025 u/ml. The interpretation of a given result will of course depend on the antitoxin content of the neutral mixture.

Dilutions of toxin, standard antitoxin and diluted blood specimens as received are made with phosphate saline-gelatine.

The following is an example of the procedure employed in testing a blood specimen: The supernatant of the diluted blood as received (1/10 dilution of blood, approx. 1/20 dilution of serum) is diluted, 0.2 ml plus 0.8 ml of buffered saline-gelatine (1/100 dilution of serum); and the 1/100 dilution, 0.2 ml plus 0.8 ml of buffered saline-gelatine (1/500 dilution of serum).

A quantity of 0.6 ml of each of the three dilutions is mixed with 0.6 ml amounts of the diluted toxin and for each mixture an 0.5 ml amount is injected intramuscularly into either thigh of a mouse (20–25 g.). In making an injection the needle of the syringe containing the toxin-antitoxin mixture is inserted in the lower part of the thigh and pushed toward the upper part. During this procedure the mouse can conveniently be held in one hand of the operator with the ventral aspect of the mouse uppermost. Two mice are injected for each mixture.

Mixtures of toxin and standard antitoxin 0.00012, 0.00025, 0.0005, 0.001, 0.002 and 0.004 u/ml are similarly injected at the same time into other mice.

Observations made on the 5th day should show paralysis of the injected legs or paralysis and death in the mice which had been injected with toxin and standard antitoxin 0.00012, 0.00025 and 0.0005 u/ml but not in the mice

injected with the mixtures containing standard antitoxin 0.001, 0.002 and 0.004 u/ml.

Possible results in the mice injected with mixtures of the dilutions of the blood specimen are:

Paralysis of the injected legs or paralysis and death of the mice injected with the three different dilutions: Hence 1/20 dilution of blood serum contains less than 0.001 u/ml or the undiluted blood serum less than 0.02 u/ml.

No paralysis in any of the mice injected with test serum: hence the 1/500 dilution contains 0.001 u/ml or more or the undiluted serum 0.5 u/ml or more.

No paralysis in the mice receiving the mixture with the 1/20 dilution but paralysis in the other mice: hence the antitoxin content of the undiluted serum is between 0.02 and 0.01 u/ml.

No paralysis in the mice receiving the mixtures containing the 1/20 or the 1/100 dilutions of serum but paralysis in the mice which received the 1/500 dilution: hence the antitoxin content of the undiluted serum is between 0.1 and 0.5 u/ml.

SUMMARY

A procedure is described for the assay of either tetanus antitoxin or diphtheria antitoxin in 0.1 ml of whole blood. With this volume of blood the lower limit of antitoxin which can be estimated is in the order of 0.02 u/ml serum for either antitoxin.

RÉSUMÉ

Un procédé est décrit pour le dosage d'antitoxine tétanique ou d'antitoxine diphtérique dans 0.1 ml de sang. Avec ce volume de sang, la limite inférieure d'antitoxine qu'on peut doser par cette méthode, est environ 0.02 u/ml de sérum pour l'un ou l'autre de ces antitoxines.

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Changing Needs in Post-Natal Care

S. C. ROBINSON,¹ M.D.

DURING the last half century, obstetrics has moved very largely out of the home and into the hospital. A consequence of this has been an alteration in our concept of the needs of the post-natal period. More and more the new mother has come to be regarded and handled very much as if she were a post-operative case in a surgical ward. There was, perhaps, some justification for this in the era when a woman remained for a fortnight in bed after delivery but, with the newer developments in the management of labour and early ambulation, it is time for a fresh look at what we are trying to accomplish at this episode in a young woman's life.

One has only to watch young couples during visiting hours, gazing through the nursery windows at the babies, to be confronted with serious questions. These young women look well and are moving about freely within hours of their deliveries. They resemble in no way a recent post-operative case, nevertheless, there is bewilderment and insecurity regarding the tasks to be faced after leaving the hospital. Anxious as they are to get home, they seem pretty poorly equipped to meet these challenges in the setting which a changed society now provides.

If there need be an excuse for a paper on this topic, it is because these thoughts have so impressed me that I feel obligated to express my views in this way, in the hope that post-natal care may be seen as a new public health problem. Its solution will obviously require the interest and effort of many allied disciplines.

The problems with which we deal in hospital practice are no longer the major difficulties. Of course there are serious situations which have to be met—haemorrhage, infection, post-partum eclampsia, thrombosis and embolism—to name only a few, are complications against which we must continually guard and which we must combat aggressively when they occur, but techniques and facilities are today pretty generally available for dealing with them. They are remedial in nature and modern post-natal care surely ought to provide more than the rather negative approach implied in the discussion of these occasional crises.

We might accomplish more by thinking of the every-day problems which face the bewildered primipara going home with her first baby, or the multipara with the doomed expression returning to the bedlam of a chaotic household with yet another responsibility. The puerperium, physiologically, lasts about six weeks. During this time there are massive changes in the body—anatomical, physiological and in the hormones. Coupled with these are substantial emotional adjustments to be made, all in an environment which has changed forever. While all this is happening, the constant and totally unfamiliar care

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of a newborn infant is thrust upon the new mother. Think of the shifts of nurses, the laundry, the formula room in a hospital nursery and then visualize this girl alone with these tasks. She has none of the assurance of the trained nurse, is required to prepare her own supplies, and provide a safe and affectionate environment for a wholly dependent infant. Is it any wonder that problems and difficulties, some small, others of the greatest magnitude, will arise? For the mother of several, the experience may not be new, and experience may have taught well, but very often she will have only her previous memories, not necessarily reassuring, to go on. Coupled with this she will have the larger household and other children.

The mother of today has more gadgets, better housing, and more education than ever before. Having a baby has never been so safe as it is today and the recent interest of fashion designers in elegant maternity garments has removed almost the last vestige of social insecurity associated with pregnancy. But I wonder if all this emancipation—even to the supermarket in every block and the car Friday nights—hasn't brought vast problems which we have scarcely recognized and certainly not faced. The "modern" attitude seems to be "you now have everything girl, and you're on your own, so get on with it". Gone are the days of the large home with its well-stocked cellar and the kindly relative who was helper as well as friend at these times. No, she's on her own, and alone she certainly is. The picture is neither rare nor drawn needlessly black.

What are the answers? Even though the young mother today is better educated than ever before, I am convinced that in education lies the answer to these problems. We must face it. The girl today is largely unprepared for housekeeping and the domestic life, and totally unprepared for motherhood. How can she be otherwise? Her schooling is practically the same as her brother's and certainly her extra-curricular activities are not centered about domesticity. There is a very good chance that her mother goes out to work and the girl is not learning more than the rudiments of housekeeping. At school, she may have picked up a few refinements, but not even the rudiments. In Home Economics class she is likely to have had flower arranging, but is most unlikely to have had diaper changing! When she leaves school, she will not seek domestic employment, and will rarely have any contact with infants and small children. So her education has failed to prepare her for the task to which she will dedicate most of her life. Is it not time that modern society should develop some means of meeting this real crisis? In the meantime, how can we assist those who are passing through these strenuous post-natal weeks? We must do more, both for the mother herself and for society in general, for the mother is the key figure in the family and society is only as strong as its component family groups.

POST-NATAL CARE

What, then, are the broad areas of post-natal care about which something can be done? I conceive of these as falling into three logical divisions, namely physical, psychological and social.

Let us assume that a woman has returned home from the hospital more or less intact. She has been attended pre-natally and the pregnancy has been

uncomplicated. She has delivered safely and has perhaps been fortunate enough to have been prepared for labour. She has not had to combat the after-effects of a general anaesthetic or traumatic delivery, and has been up and around within a few hours. Thus, she has avoided the problems of embolism, thrombosis, sub-involution of the uterus and haemorrhage. Despite this she is exhausted in every way. Modern hospitals are devoted to ancient ritual, and post-partum days are busy with early washings, late feedings, perineal care and all the other rigmarole presumed to be conducive to efficiency. Then there are the visitors—all the related and otherwise curious have an uncanny facility for descending in droves on the new mother, almost as if it is the last possible glimpse of her. Often as not, after they leave, we find her tense, sobbing and exhausted. Could we not be more humane, and really enforce strict visiting regulations and simplify hospital life?

On the physical side, there are a few particular problems of common occurrence which are worth looking at. Particularly in multiparae, anaemia is, or soon becomes, a real problem for many mothers. Routine haemoglobin estimation at the post-natal examination should be the rule, and when anaemia is discovered it should be treated and followed to be sure therapy is effective. It is surprising how long it usually takes to treat adequately iron deficiency anaemia in the young woman. This is of course because she continues to lose steadily at each menstrual period and with each pregnancy; because one's ability to absorb iron taken orally is strictly limited, treatment for a year or more may be necessary. Sometimes it will be preferable to use parenteral iron therapy in order to replace iron stores and obtain a more rapid haemopoietic response.

Breast feeding: Besides the aversion to this duty which modern life has created, there are other problems. One of these is the failure to recognize that proper breast feeding takes time to establish. Too often, the milk has no more than "come in" before the mother goes home to all the stress and responsibility of her home. How can we expect her to settle down calmly to a nursing routine? No good farmer would tolerate for a moment in his dairy herd, the conditions we impose on the human mother. Either we must keep women longer in the hospital or some other type of recuperative institution, or women must have intelligent and kindly help in their own homes. Failing this, breast feeding is doomed to extinction and the breast will replace the appendix as the most remarkable vestigial organ of the body.

Nutrition: Without labouring the point, can we not agree that all the factors which apply prenatally, apply equally in the post-natal period during which time the body is also making large adjustments? Indeed, good nutrition is a life-time project to which we Canadians pay largely lip service. I am afraid we have not done a very good job in getting people to eat properly; and much of the difficulty which the young mother experiences can be attributed entirely to improper nutrition.

We have, and of course teach, Canada's Food Rules, and these are an excellent outline, but in terms of fitting a family's daily needs into a limited budget, this outline is not good enough. Somehow we will have to discover some means of showing people how they can eat better for less money. We

shall have to be very practical about this and avoid generalities. As an example of the sort of thing I am thinking about, let us consider milk. Milk is marketed in many forms, but I am amazed every day that people do not realize that all these forms are equally valuable nutritionally. Fluid milk is expensive, keeps poorly, occupies a great deal of refrigerator space, and it is often distributed in rather crude and awkward containers without any sanitary covering for the pouring rim. There are alternatives. One woman had heard of powdered skim milk in cooking but was astonished to learn that she could feed it to her children. People should be told that this product, tons of which we ship abroad each year, is also fit for Canadian mothers and children. It costs less than one third as much as fresh milk and is, for practical purposes, equally valuable as a food. Similar facts about other foods apply. The buying and use of meat and fish, cereals and vegetables is a field controlled almost entirely by high pressure advertising, and very little by scientific knowledge and common sense. The post-natal period can provide an opportunity for useful work along these lines with a group of people who are highly receptive.

KEEPING YOUR FIGURE

It is a rather widely held view that a cost of producing babies is the loss of one's figure. Now all of us know this is nonsense. But it isn't any sillier than some of the traditional exercises which have been practised in many of our hospitals. With early ambulation being used almost universally today, there are only a few particular exercises of real value. These should do certain things: the abdominal muscles need to be restored to something very closely approaching their former state. The work a woman does in the house has little effect on the tone and vigour of these muscles. Therefore, special exercises should be used. These are chiefly "sit-ups", but leg raising can also be used. Backache is an all too common complaint. This can usually be prevented by strict attention to posture and the proper method of lifting. Additionally, one can teach exercises for the large back muscles, and buttocks. These should be done in such a way that they do not increase the tendency to lordosis. And finally, now is the time to prevent future prolapse and the leaky bladder associated with stress incontinence. As with all exercises, one need not insist on long periods of practice. Ten minutes a day is sufficient, but one must emphasize that the exercises must be done regularly every day and that they will have to be practised for as long as six months. In addition to these special exercises, a brisk daily walk outside is of immense benefit both for the physique and for the outlook and tranquillity of the spirit.

These simple precautions will ensure that the three problem areas in the female's anatomical set-up will be restored—the abdomen, the seat, and the bladder. Additionally, a proper supporting type of nursing brassiere will be a sound investment.

POST-NATAL EXAMINATIONS

Before completing the discussion about the physical factors in post-natal care, I should briefly mention the post-natal examination. This is too often neglected. It has value for two reasons: first, for itself, as it provides an opportunity for final assessment, to confirm that proper involution and healing has

occurred, and to correct minor defects; and secondly because it is a most valuable opportunity to find out how the mother is getting along with her baby, to make suggestions which will help her, and to teach her about the various signs and symptoms which, should they develop in the future, would indicate that she should go for examination. Finally, at this time advice can be given as indicated, and within the framework of the patient's beliefs, about family planning. It is now, rather than in the middle of the next pregnancy, that this should be done.

PSYCHOLOGICAL FACTORS

The next big area of post-natal care involves a consideration of the psychological factors peculiar to the recently delivered woman. All of us know of the so-called post-partum psychosis, but this is uncommon, and indeed not confined to this particular time, being perhaps precipitated by childbirth, but not differing in psychopathology from similar episodes occurring at other times. Nor is therapy, in which electric shock plays a large role, significantly different. There are, however, much more frequent reactive disorders, usually depressive in type, which cannot be called psychotic. The etiology is generally abundantly clear, and insight easily achieved.

I think of the young woman whose emotional faculties have been keyed up in anticipation of fulfilment of her instinctive mother-role, who has reached achievement in a conscious delivery, and who has for a time basked in her own sense of satisfaction and the enthusiastic accolade of her family and friends. Unfortunately, the exuberance of others is short lived and before long she finds herself left to her own resources. Most women wish for motherhood and are quite prepared to undergo the exhausting and often painful experiences required, but surely this is because they see their experience and the result in the family setting. Parenthood should begin for both parents at the time of conception, and if a woman is to endure cheerfully the emotional stresses of childbirth, she requires the companionship and support of the other parent. So there is a very large need for educating husbands for the tasks of parenthood. The father cannot participate in the birth of his child other than rather indirectly, and he is equipped even less than the mother for the role of parenthood. Most men are rather stunned at this stage and very often disguise their ignorance and inadequacy by either boisterous or aloof behaviour. The father should be brought at once into intimate contact with the child and one of the great advantages of having the baby "room in" is the opportunity for the father to handle and become aware of his child. If he also learns to change the diaper occasionally, so much the better. No less than the mother, the future relationship between father and son or daughter may well be determined at this stage. Why should the father be rather unceremoniously hustled out of the room at feeding times, or be placed behind glazed barriers? This is the time to strengthen the ties in the family, not to strain them. By having the father become involved from the beginning as a parent, he will have a more realistic and sympathetic understanding, and should be a firmer support and better companion for the new mother.

The other important psychological problem at this time is fear. Fear is generally born of ignorance, in this case timidity and insecurity regarding the

baby. Here is a real challenge to all of us because it is surely not beyond our capacities to arrange some sort of practical instruction in the care and management of the newborn baby. This must be intensely practical and in some detail to be of any use. Could we not arrange classes and demonstrations given in a home setting by selected and experienced mothers? I am sure they would be more effective than formal classroom sessions given by professional workers. At the same time, the essentials of infant feeding should be streamlined and simplified. It cannot be so involved and difficult as it is often made to appear.

Things which seem very obvious to us are generally not nearly so obvious to the new mother. She is going to worry and fuss anyway, and it is much better for her to have a simple system to follow than to be dependent on the whims of every well-wishing neighbour in the vicinity.

SOCIAL

The last aspect of this matter of post-natal care is social. It has been said that the most important thing a woman can do is to have a baby. Surely this is only part of the story, and the really important thing is to nurture and raise the child in a wholesome family atmosphere. No two families are alike, and however much a girl may be guided or coerced by her mother or her mother-in-law, and no matter how successful they were, her problems are different. So she, with her husband, must have freedom to develop their own methods, a basic framework of knowledge to build on, and courage with a sense of adventure to persevere. Society may not always encourage them, but we who deal with these people can never forget that friendly interest, unpatronizing but with a dash of humour and skilled counsel reduced to practical terms, will do much to help the new mother over the rough spots.

Fruition she has achieved in the biological sense, respect she can earn in due course; in the meantime she has a difficult, and sometimes terrifying, and often monotonous course. Now there is no eight hour day, no five day week, but she has achieved maturity and instinct drives her on. With the reasonable sort of help we should be able to provide, she can rise above her difficulties and enjoy the daily delights of rearing her own child.

SUMMARY

The education and upbringing of the modern girl do not fit her for motherhood. She is taught much the same subjects as her brothers and on leaving school rarely seeks domestic employment.

Scientific advances have made possible, almost universally, safe obstetrics. The few complications that may occur post-partum can be dealt with and after childbirth a woman is very soon ambulant, and she looks and feels well. But she is bewildered, often frightened and only rarely are useful forms of assistance available. Areas of post-natal care about which something must be done include physical, psychological and social.

Physical: Hospital routine should be simplified and made really restful. Breast feeding will not succeed unless there is a good start in a calm atmosphere with suitable help for the mother. The prenatal period could be well used to teach nutritional principles, so widely neglected in Canada. The post-natal examination is too often neglected.

Psychological: Despite all the modern conveniences, the new mother is on her own too soon and too completely. The father should be brought into intimate and immediate contact with the baby while it is still in hospital, in order to foster a close family relationship. Fears and insecurity regarding the new baby could be largely eliminated by proper prenatal instruction on household management and infant care.

Social: Society today gives little personal support and comfort to the new mother. Not only the practical advice but also the friendly interest and counsel of those of us who work with these women will be of real value in helping them to make gracefully and effectively the adjustments required in the post-natal period.

ANNUAL MEETING NOVA SCOTIAN HOTEL - HALIFAX, N.S.

TENTATIVE ENTERTAINMENT PROGRAM

MONDAY, May 30, 1960

8:00 p.m.—Welcome Party tendered by the Nova Scotia Branch—C.P.H.A.

TUESDAY, May 31, 1960

11:00 a.m.—Visiting Wives—Coffee Party in Presidential Suite

2:30 p.m.—Visiting Wives—Trip to Citadel, and Army and Navy Museum

WEDNESDAY, JUNE 1, 1960

11:00 a.m.—Visiting Wives—Coffee Party in Presidential Suite

6:30 p.m.—President's Reception—New Ballroom

7:30 p.m.—Annual Dinner C.P.H.A., tendered by the Province of Nova Scotia—New Ballroom

9:30 p.m.—Dance—New Ballroom

THURSDAY, JUNE 2, 1960

11:00 a.m.—Visiting Wives—Coffee Party in Presidential Suite

3:30 p.m.—Trip to Peggy's Cove and Hubbards

6:00 p.m.—Lobster Supper—Shore Club, Hubbards

**BRING YOUR FAMILY AND ENJOY
A NOVA SCOTIA HOLIDAY**

The Effect of Population Movement on Housing as it Concerns Public Health¹

E. G. FALUDI,² P.Eng., D.A.

AROUND 1940, there began what now may appear to be a most unexpected dramatic reversal of the trend in western fertility which has brought the Canadian crude birth rate back up to about 27.6 per thousand at present, and the American rate to over 25 per thousand. During 1957 and 1958, this nation produced 469,000 and 470,000 children respectively, with Ontario accounting for about 28% of these figures. Since 1943, over 1,775,000 children have been born in Ontario. Simultaneously, with the rise in birth rates has occurred an increase in life span—from 63 years for men and 66 years for women in 1941, to 66 years for men and 71 years for women in 1951. For children born in 1959, life expectancy is estimated at 70 years for men and 75 years for women.

There has, along with the great increase in proportion of the population in the younger age groups, come about a rapid reduction in the death rate, which has fallen from 10.5 per thousand in 1943 to 8.5 per thousand in 1958.

From 1931 to 1958, the Canadian population increased from 10.7 million to 17.0 million, an increase of about 70% over 28 years.

Reliable projections predict a total population in Canada of 20.2 million in 1966 and 24.2 million in 1975, on the assumptions of continuing high levels of births and immigration.

The population of Ontario is, on average, about one-third that of Canada and the population of Metropolitan Toronto is about one-quarter that of Ontario.

Problems of Urban Migration:

The Royal Commission on Canada's Economic Prospects predicts that over 70% of our population will live in urban communities. Among the problems which the central cities will continue to face in connection with the land use reorganization of the metropolitan community areas is the lowering of the ratio of residential land uses to other uses. The more the residents leave the central cities, the greater will be the pressure of other functions to fill the vacated areas.

One of the most pressing tasks in the attempt to improve the residential areas of the central cities in the older regions of the nation is that of lowering the residential density. This means that a judicious allocation of the vacated

¹Presented at the tenth annual meeting, Ontario Public Health Association held in Toronto, Ont., Sept. 28–30, 1959.

²E. G. Faludi and Associates, Town Planning Consultants Limited, 614 Church Street, Toronto, Ont.

space to residential and non-residential functions must be achieved in order to arrest "city blight".

Since the operation involved will necessarily be expensive in the older and historical cities crowded with obsolete buildings, this problem, too, will be aggravated by the lowering of the average financial status of the central city residents consequent to the centrifugal migration. Aside from the removal of large parts of the upper and middle status groups from the central cities, the future character of the central city population will be altered by another important change.

The next generation of central city inhabitants is being produced largely by natural increase of the remaining residents rather than by immigration as in the past. Apart from lowering the social status level of the residents, the conjunction of these two factors will increase the homogeneity of the central city population in general as well as with respect to their standing on scales of occupation, income and education. This increased homogeneity of the population, within the central city and within the metropolitan ring, constitutes a very radical departure from past conditions when North American cities were regarded as the very epitome of social heterogeneity, and the implications will be accentuated by the increased heterogeneity between the central city and the ring.

Further, it seems probable that small top-status groups who can, for one reason or another, afford the price of such action, will form highly exclusive residential islands within the central cities and will defend the high residential quality of such areas "at a price". This kind of sentimental attachment of the "old families" to "their" area is characteristic of Rosedale and Old Yonge Street areas in Toronto. It will tend to create the juxtaposition of what Lewis Mumford called the "high class slums", i.e. those of the lowest status groups. If the populations of the central cities will thus tend to become typical of the North American population as a whole by the removal of large parts of "the great middle class", this process will become accentuated by the peculiarity of North American culture which strongly associates status with "ethnic origin".

The Need for Housing

The increased status of urban residence locations will be reflected in alterations in the demands for housing and other goods and services. The change will not merely reflect in the fact that the more homogeneously low status populations of the central cities can afford to buy less of the necessities and amenities of life, but also that they will make different demands on their housing and on the other goods and services which they can buy. A population, where a significant proportion of married women hold full-time jobs and where a large proportion of the dwelling units are occupied by families differing in size and structure from the typical two generation North American middle-class family, has housing requirements at variance with the "typical North American home". Such groups constitute the sub-cultural variations on the theme of the "North American style of life", reinforced by differing notions of what constitutes a proper dwelling, dwelling maintenance, and dwelling behaviour. These differences in habits and expectations will presumably affect

the whole range of social behaviour, extending from matters concerning residences and goods and services to political and religious behaviour and planning and administration will be affected by them.

The Effect of Industrialization

Another effect on housing is now recognized by the fast industrialization of Canada. The measure of industrial expansion and its possible social results can be seen from the following statistics. From \$3.5 billion in 1939, the Canadian Gross Value of Production increased to \$10.8 billion in 1957—a rise of over 200% in less than 20 years. The equivalent figures for Ontario are about 50% of those of the Canadian total. It will be seen therefore that Ontario possesses a substantial portion of the Canadian industrial effort and it is to be emphasized that much of this portion is located in or near the large cities of South Ontario (mainly the cities of Toronto, Hamilton, Windsor; to a lesser extent, the cities of London, Ottawa, Oshawa). Since the drift of population and immigration is always towards industrial areas, Southern Ontario is and will continue to be affected by population expansion and its attendant problems.

Industrial Slums

The industrial city has always had its critics. It is said to be inefficient, overcrowded, disorderly, and now vulnerable—to mention only a few distressing aspects. Apart from its social drawbacks, it has economic disadvantages. It impedes good factory layout by the shortage of land for extensions of factories to cope with extra production; it increases costs of production by driving up the price of land; it increases labour costs because usually local labour is in short supply in congested districts; it increases costs of transport because roads and streets are overburdened with industrial traffic; and it increases the costs of dealing with increasing quantities of industrial and trade effluent. All these waste economic resources—waste which could be reduced if congestion were curtailed.

The proposed cure in some quarters is to stop the growth or reduce the size of cities by planned redistribution of jobs and population to more or less self-contained new communities. Unfortunately, not enough thought has been given to the feasibility of the cure or the circumstances by which such a policy could be effected.

Deconcentration

The policy of the New Towns in Britain was originally intended to decongest London and to reduce its excess or "overspill" population. There was also some hope of arresting the movement of population from other regions to London and the Home Counties. This policy presupposed at least redistribution of population from the central areas to the periphery, and possibly some transfer of population to other regions of Britain.

However, it succeeded in the deconcentration of population from the central city to peripheral areas of the same region, the relative decline in the concentration of population in the central city compared to peripheral areas of the

same region, and an absolute or relative shift from older more concentrated metropolitan regions to other less developed regions.

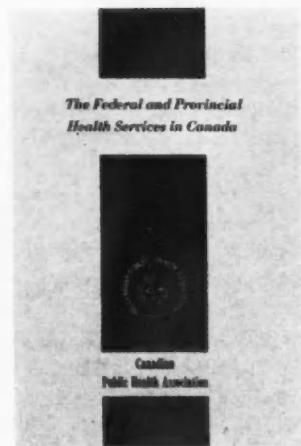
As an example—for Metropolitan Toronto, the effect of de-centralization may be illustrated by the following data:

- (1) In the last several years, more than 50% of all immigrants to Canada have settled in Ontario and, of this figure, at least 40% have settled in Metropolitan Toronto or about 20% of total Canadian immigration in the same period. In short, since 1943, of a total figure of more than 1,600,000 immigrants entering Canada, almost 1,000,000 have settled in Ontario and about 400,000 in Metropolitan Toronto. During this period, the average annual increase in the immigrant population of Metropolitan Toronto was about 25,000 a year; in the last 6 years the average annual immigrant increase for Metropolitan Toronto was almost 67,000.
- (2) The estimated distribution of metropolitan population by 1980 over 1955 shows the following increases: City of Toronto 8%, inner suburban ring 12%, suburban townships 263%, fringe areas 344%.

The average annual total of new housing units required during this period will be 18,000 of which 20% should be in some form of public housing.

This means that the population movement in Metropolitan Toronto may cause a revolutionary change in the policy of the provision of shelter for the lower income class.

The Federal and Provincial Health Services in Canada



THROUGH the co-operation of the Deputy Ministers of Health a series of articles outlining developments and present services has been published in the Journal during the past two years.

These articles, with revision, have now been published as the Commemorative Volume of the Association's Jubilee.

The volume has 150 pages, the price is \$1.75, and the book is available from the National Office, Canadian Public Health Association, 150 College Street, Toronto 5, Ontario.

What is "Adequate" in Water Supply?¹

K. M. ANTHONY,² P.ENG.

THE selection of the proper water service is not simple, many intangibles are involved. Local conditions of all kinds are factors and in recent years the problem has become further complicated by the increased use of water-consuming appliances, including air conditioning systems and flushometer valves.

Provided that supply and pressure are available at the street main, inadequacy of supply or insufficient residual pressure can usually be traced to inadequate size, length and condition of the service line. Other factors are the plumbing, shut-off valve, main tap, number of fixtures and meter.

Recognition of the fact that what was good enough in the past is not good enough today has influenced supply authorities to install larger services, particularly for commercial and industrial accounts. Changing consumer demand and the high cost of replacing services have further influenced the trend to install larger services initially.

Because of estimates and assumptions involved in determining service sizes, there is considerable difference of opinion. The difference is increased by the lack of knowledge of the probable maximum demand of various types of establishments. Similar buildings with the same type of tenant often show a variation in demand. Even when data are available, good judgment and experience require that a margin of safety be provided for business expansion, technological changes and similar contingencies.

In regard to meters, the usual practice is to install the smallest one of proper design which can handle the range and frequency of change of flow rates experienced. Low flow accuracy is relatively better in small size displacement meters. The size depends largely upon the expendable pressure available and may be determined by learning the maximum demand and permissible pressure loss, and by referring to a capacity curve of the meter to be used.

In the last few years there has been an increasing demand in domestic services which has resulted from increased installations of water-using fixtures. This demand will continue to rise with the introduction of new water-consuming appliances. Automatic washing machines, air conditioning units, dishwashers, garbage grinders, lawn sprinkler systems and many other devices once rare are becoming quite common and their use requires that larger services be installed.

In order to give proper consideration to the size of the whole service assembly the demand rate on the modern domestic services must be determined.

¹Presented at the annual meeting, Ontario Public Health Association, Toronto, Sept. 29, 1959.

²Public Utilities Commission, Township of Scarborough, Ontario.

According to data available the reasonable rates of flow for various water-using fixtures and appliances are as follows: laundry tubs—5 g.p.m., toilet tank—4 g.p.m., kitchen sink—4 g.p.m., bath tub—4 g.p.m., shower—3 g.p.m., lawn sprinkler—6 g.p.m., washbasin—3 g.p.m., making a total of 29 g.p.m. Consumption rates for similar fixtures of different manufacture vary but the above figures are reasonable.

Requirements of flow for dishwashers vary with manufacture up to 5 g.p.m. with a residual pressure of 20 g.p.m. Garbage grinders consume 2½—4 g.p.m. depending on make and model. Water cooled air conditioners require about a 2 g.p.m. per ton capacity and for the normal dwelling at least a 3 ton unit is required. With the introduction of less efficient air cooled air conditioning units of comparable size the eventual effect of air conditioning on water consumption in the home is uncertain. The following figures may be used for illustration: automatic washer—5 g.p.m., dishwasher—2 g.p.m., garbage grinder—3 g.p.m., air conditioner—6 g.p.m., total consumption—16 g.p.m. When we add this amount, 16 g.p.m. to the previous 29 g.p.m. there is a connected load of 45 g.p.m. It is a remote possibility that all units would be used at once but now, with automation in the home, it is possible to be using several at the same time. Such combinations would approximate 15 g.p.m. and the domestic demand for many of today's services should be fixed at this figure.

Selecting the proper size service to supply this demand involves many factors such as pressure at the main, pipe friction losses, corporation fitting losses, meter losses and adequacy of plumbing distribution lines. "Loss of head" curves and charts for the various components of the overall service should be consulted to obtain the total permissible head loss that will ensure required demand at fixture and appliances with sufficient residual pressure.

If it is assumed that the average water service line from main to house is 60 feet then from a prepared curve we see that with $\frac{3}{4}$ " copper piping there will be a loss of about 23 g.p.m. Loss of head through 60 feet of full service line, including a corporation stop, curb stop and a new $\frac{1}{2}$ water meter at 15 g.p.m. is shown to be about 38 psi. If the pressure at the main is 60 psi then this leaves a residual pressure of only 22 psi a bare minimum. With a 60 foot 1" service line and a full $\frac{3}{4}$ " water meter the chart shows that at 15 g.p.m. there is only an 11 psi head loss. This would leave a more desirable residual pressure of about 50 psi. The data for the loss of head curves were obtained using new equipment and it is logical to assume that the longer the line is in service the greater the increase in head loss, due to accumulation.

In view of the above it would appear that for the new modern home using all of the new labour saving water using appliances it would be most practical to require a full 1" service line with a $\frac{3}{4}$ " water meter. The average home of today having a demand of 5–10 g.p.m. is being adequately serviced with a $\frac{3}{4}$ " water line, but with the possibility of more fixtures being added from time to time the trend is toward installing larger services initially, rather than to engage in costly replacements.

The water meter should be of a proper size to serve efficiently and without undue pressure loss. The smallest meter that will adequately handle the flow

will result in the most accurate metering in relation to return on investment. All the revenue possible from the sale of water is desirable and to accomplish this the most accurate metering must be used.

Perhaps the type of service which is most consistently oversized or over-metered is the large commercial and industrial one. It is not uncommon to encounter requests for large size services and meters by architects and engineers in the design of large buildings. Although the demands seem somewhat exaggerated they generally represent good design because they consider the many factors involved and because they have knowledge of the rate of water use required for their present and future needs. Often one must concede to the architects and engineers by putting in a meter which, it is felt, is too large for the particular service. The larger meter installation should be subject to review at a later date and sufficient flexibility in meter installation should be provided to permit the size and type of meter to be changed with a minimum of expense when change of service requirements necessitates it.

To determine whether a meter in service is of proper size a recording register mechanism can be attached to the meter and data on the maximum and average demand rates obtained. By the use of recording registers it has been discovered that frequently the larger 3" and 4" compound meters can be replaced with smaller more accurate meters with a smaller head loss and which achieve as much as 25% more registration.

A study of installations in schools, apartment dwellings, hotels and factories can result in considerable savings in capital outlay and both the consumer and the supply authority receive better service from the meter.

SUMMARY

It is not possible to lay down precise recommendations on the proper size of service for various types of consumers as the use of water will vary in similar buildings of the same size with the same type of tenant. Many elaborate methods have been devised to determine service connections but apart from the average house connection, which is usually standardized for economical reasons, the selection of the proper size requires careful calculation together with experience and practical knowledge. Discussion with the consumer concerning the type and number of appliances, the demand required and an appraisal of future needs will result in prescribing the size of service and meter required to render long and adequate service to a satisfied customer and will result in the most accurate metering for maximum revenue.

SOMMAIRE

Il est impossible d'établir des données précises quant au service d'eau nécessaire pour diverses catégories de consommateurs, car les besoins à satisfaire varient dans des bâtiments semblables occupés par des personnes présentant les mêmes caractéristiques. Des méthodes élaborées ont été essayées pour calculer le diamètre des raccordements, mais le choix est plutôt déterminé par l'expérience. Le volume d'eau à fournir peut être établi après consultation avec l'intéressé et tenant compte du nombre d'appareils actuels et futurs à desservir; le tuyau de service et le compteur d'eau ad hoc sont choisis pour garantir un bon service à la satisfaction du client, l'assurant que l'enregistrement du compteur sera exact. (Trad.: T. J. Lafrenière)

Bacteriophage Typing of Staphylococci Isolated from Animals

PHILLIP H. MANN¹

STAPHYLOCOCCI are widespread and currently constitute a serious public health problem. Considerable data are available in the literature concerning the bacteriophage typing of *Staph. aureus* isolated from various domestic animals. These surveys have been conducted mainly in cattle and to a much lesser extent in other animals including domestic fowl (1, 2, 4, 5, 6, 7, 8, 10, 12, 13). This study was undertaken to obtain additional information on whether coagulase-positive staphylococci derived from animals have phage patterns similar to strains isolated from or known to cause staphylococcal disease in man.

MATERIALS AND METHODS

Four hundred and sixty different strains of micrococci (fresh isolates, lyophilized and old stock cultures) were received in pure culture or as a component of purulent material, from various sources throughout the country. Of this number, 228 were identified as coagulase-positive staphylococci. The bacteriological methods employed were similar to those described previously (8).

Phage typing was accomplished with an apparatus* whereby the following staphylococcal phages, used primarily for typing strains of human origin, were deposited simultaneously on to the surface of an agar plate prior to seeding the same plate with the organism to be tested:

Group I, phages, 29, 52, 52A, 79, 80, (81 is unclassified)

Group II, phages, 3A, 3B, 3C, 55, 71

Group III, phages, 6, 7, 42E, 47, 47C, 53, 54, 73, 75, 77, 83

Group IV, phage, 42D

187 is unclassified

Each strain was first typed with the routine test dilution (10^{-3} to 10^{-5}) of each phage. Strains resistant to lysis by all the phages used in these dilutions, were then retyped with concentrated phage (10^{-1} dilution of phage).

Sensitivity of only the fresh isolates to penicillin was determined using a modification (9) of the medicated disk-tube dilution method (11). A strain was considered to be susceptible if its growth was inhibited by 10 units of the antibiotic per milliliter of broth.

*Chief, Section of Bacteriology, Department of Laboratories, Lebanon Hospital, Bronx, New York, U.S.A.

*U.S. Pat. Pending No. 773057, developed by S. Goldberg, Phage Typing Laboratory, New York City Department of Health.

RESULTS AND DISCUSSION

One hundred and twenty-six of the 228 coagulase-positive staphylococci were freshly isolated strains and therefore were tested against penicillin. Of these, only 11 were resistant to more than 10 units of penicillin per milliliter of broth.

It is pertinent to point out that a number of these animal strains exhibited phage patterns similar to strains isolated from man (Table I). Furthermore, three of the bovine cultures (obtained from E. A. Lozano, Corn States Laboratories[†]; D. W. Bruner, New York State Veterinary College⁺⁺; D. A. Hoff, The Warren-Teed Products Co.⁺⁺⁺) were identified as type 80/81 (often designated as "epidemic strain"; 52/42B/81; 52/42B/80/81; 52/42B/81/44A). This is of considerable interest since published reports (3) have referred to *Staphylococcus aureus* of phage type 80/81 as a major cause of infections in many parts of the world. We have been unable thus far to find reference in the previous literature where "type 80/81" has been isolated from a domestic animal including fowl. It should be emphasized, however, that many of the bacteriophages presently used in typing human strains of staphylococci were not available a few years ago.

TABLE I—BACTERIOPHAGE PATTERNS OF 228 COAGULASE POSITIVE STAPHYLOCOCCI ISOLATED FROM VARIOUS DOMESTIC ANIMALS

Animal Source	No. of Strains	Phage patterns obtained upon typing a culture of the strain with the Routine Test Dilution of 10^{-3} to 10^{-6} dilution of each phage	Phage patterns obtained upon re-typing same NT culture with concentrated phage or 10^{-1} dilution of each phage
Bovine	60	NT	NT ^a
	1	NT	80/81+
	1	NT	42D
	1	NT	75/81
	1	NT	7/42E/47/73/75/81
	1	NT	6/7/42E/47/47C/75/77/81
	1	3A/3B/3C/6/7/29/42E/47/52/52A/ 53/54/55/71/75/77/80/81/83	
	1	6/47	
	1	6/7/42E/47/47C/54/73/75/80	
	1	6/7/29/42D/52/52A/54/73/77/79/80/ 81/83	
	1	6/7/29/42D/42E/47/47C/54/73/75 79/81	
	1	7	
	1	7/42D/73/81	
	1	7/42D/47/73/81	
	3	7/42D/79/81	
	1	7/42D/77/81	
	1	7/29/42D/52A/73/77/79/81	
	3	7/42D/81	
	3	7/42D/52A/81	
	1	7/29/42D/52/52A/80/81	
	1	29/42D/52/52A/79	
	1	29/42D/52/54	
	1	29/54/80	
	2	29/52A/54/80	
	4	29/52/52A/80	
	21	42D	
	3	42D/81	
	2	42D/52A	
	2	42D/52A/80	
	1	42D/79	
	1	42D/42E	
	1	42E	

Bovine	1	42E/54/81	
	1	42E/47/47C/81	
	1	42E/47/47C	
	1	47/81	
	2	47/54/81	
	1	52A	
	1	52A/80	
	1	52/80	
	2	52/80/81	
	3	53/77/83	
	2	80/81++++;++	
	2	81	
	1	187	
Ovine	8	NT	NT ^a
	1	NT	3A/3B/3C/7/29/42D/42E/52/
			52A/53/54/55/71/73/77/80/
			81/83
	1	29/42D/42E/52A/53/55/73	
	1	52/80/81	
	3	54/73	
Equine	4	NT	NT ^a
	1	NT	29/52/52A/80
	1	NT	52/52A/80
	1	6/7/29/42E/47	
	1	42E	
	1	42E/81	
Canine	23	NT	NT ^a
	1	NT	42E
	1	3A	
	1	7	
	1	29/52/80	
	1	42D/52A/71/80	
	1	52/80/81	
	1	53/75/77/83	
	1	187	
Feline	6	NT	NT ^a
	1	NT	42E
	1	80	
Porcine	3	NT	NT ^a
Avian chickens and turkeys	7	NT	NT ^a
	1	NT	29/42E/80
	1	NT	42E
	1	29/80	
	1	29/52/80	
	1	29/71/80	
	1	42D/42E/53/54/73/81/187	
	1	42E/54	
Dogs or cattle ^{**}	1	NT	NT ^a
	3	7	
	1	7/42E/47/47C/54/73/81	

NT—nontypable; culture resistant to lysis by all the phages.

NT^a—except where otherwise noted, culture still nontypable.

**—Sender could not supply the exact identity of these strains stating that they were isolated from either cattle or dogs.

++++;+;+—“type 80/81” is frequently referred to as “epidemic strain”, however other strains may be equally as pathogenic.

One hundred and twelve strains were nontypable or resistant to lysis by all the phages (diluted or undiluted). All coagulase-positive staphylococci should be regarded as potential pathogens. The possibility therefore exists that these nontypable strains may be as pathogenic as those exhibiting other phage patterns.

SUMMARY

In the present investigation coagulase-positive strains of *Staphylococcus aureus*, isolated from various domestic animals, were tested against penicillin and phage typed using bacteriophages which are used in typing staphylococci of human origin. A number of these animal strains exhibited phage patterns similar to strains isolated from or known to cause disease in man.

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RÉSUMÉ

Cet article fait état des recherches de l'auteur sur des souches coagulase-positives de *Staphylococcus aureus* dont la résistance à la pénicilline fut évaluée et qui ont été typées en utilisant des phages utilisés pour le typage des staphylococques d'origine humaine. Un certain nombre de ces souches appartiennent à des lysotypes semblables à ceux de souches provenant de cas humains d'infection, ou dont la pathogénicité pour l'homme est connue.

(Trad.: Dr M. Panisset)

Reminding You Again!

The treasurer of your provincial health association or branch should receive your fees NOW in order that the National Office may be advised before the names of those in arrears for 1960 are removed from the mailing list of the Journal.

Do Your Part to Strengthen the Association!

Canadian Journal of Public Health

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THE ASSOCIATION'S FUTURE—IMPORTANT DECISIONS TO BE MADE AT THE HALIFAX MEETING

THE policies of the Canadian Public Health Association and its work are determined by the Executive Council meeting in session on the occasion of the Association's annual Congress. This year, the Council will hold its meetings in Halifax on May 31, the day preceding the formal Congress.

The Council is a representative body. The Association now has eight provincial associations, divisions or branches. Each is entitled to representation by three members. The chairmen of the various sections of the Association are Council members, thus providing for the presentation of the needs of the special fields. The deputy minister of health of the federal department and the deputy ministers of the provincial departments of health are members of Council. The membership includes also the executive officers of a number of city health departments and health units and representative public health nurses, veterinarians, engineers, sanitary inspectors and other personnel.

The Council, at the Vancouver meeting in 1958, gave a major place in its discussions to the work in which the Association may engage in the near future. The Committee to study the Present and Future Needs of the Association, under the chairmanship of Dr. K. C. Charron, presented a comprehensive report.

The report emphasized the necessity for leadership in co-ordinating professional and voluntary health agencies. It stressed the need which exists for a close working relationship between voluntary health organizations, and, also between these organizations and official health departments, stating that the Canadian Public Health Association as the senior professional body in the public health field should provide this leadership. Of far reaching importance was the recommendation that the Association provide consultative public health survey services. There is no agency or private organization providing these services in Canada at present. The Association, having access to well qualified specialists in the various fields, could help in planning new services and in solving special problems. These arrangements would supplement the advisory services provided by official health departments and add greatly to

the prestige of the Association. The report stressed that the key position in this development would be the appointment of a full-time executive officer. To meet the needs, this officer should be a physician with recognized stature in the field of public health.

Of fundamental importance was the strengthening of provincial associations through which the national body would receive support and would reciprocate by providing valuable services to the provinces. A strong national association must be based on firm provincial ties and support.

The Council adopted the report and endorsed the forward-looking program. One of the first needs was a study of the charter and the by-laws of the Association. Dr. Charron was asked to serve as chairman of this committee and to report back to Council in 1959. At the 1959 meeting in Montreal, recommendations concerning the charter were received and adopted. The committee under Dr. Charron proceeded to seek the necessary federal legislation and a private bill is now before this session of Parliament, under the guidance of the Honorary Solicitor, Mr. R. E. Curran, Q.C.

At the Montreal meeting, following the recommendations of the report, Council appointed a committee with the suggestive title "The Action Committee" with Dr. Roth as chairman to study further the implementing of the new program. An Advisory Finance Committee was also appointed. Reports of these committees will be presented at the forthcoming session of the Council in Halifax, and decisions which will vitally affect the future of the Association must be made.

A committee under Dr. G. E. Wride will make its first report on the relation of public health services to practising physicians, dentists, veterinarians, and members of the nursing profession. The Committee on Professional Education, under Dr. J. M. Mather, has given special attention to sanitary inspectors and public health educators.

Commencing in 1946 the Association conducted surveys of salaries of all members of the public health profession serving in Canada. These surveys have been made at intervals of three years. The findings of the survey conducted this year will be presented to the Executive Council. The survey this year has been conducted under the direction of Dr. L. A. Clarke, Medical Officer of Health of Hamilton, Ontario.

Social security is intimately related to public health. In 1943 the Association presented a brief to the Social Security Committee of Parliament and since then a committee named by Council has continued to study the contribution and place of public health in its relation to the provision of health insurance, including hospital insurance. Dr. G. Graham Simms of Halifax, as chairman of the Medical Care Section, will report on this important subject.

The Halifax meeting may well be the most important in the Association's history. The program promises to be outstanding. Every member will find it an advantage to be in attendance. Nova Scotia and Halifax are known throughout Canada for their hospitality. The Association speaks for you. Your voice should be heard in the deliberations of the Halifax meeting. Do your part!

Preliminary Program
ANNUAL MEETING
Canadian Public Health Association
and
The Nova Scotia Branch

NOVA SCOTIAN HOTEL, HALIFAX, NOVA SCOTIA
MAY 31, JUNE 1-2, 1960

MONDAY, MAY 30
PRE-CONVENTION MEETING
Salon E

9:30 a.m.—Meeting of the Executive Council—Canadian Public Health Association
12:30 p.m.—Assembly of Exhibits
2:30 p.m.—Continuation of Executive Council Meeting
8:00 p.m.—Welcome Party Tendered by Nova Scotia Branch—Mezzanine Floor

MONDAY, 2:30 p.m.
REGISTRATION

All in attendance are expected to register. The registration fee is \$5.00. Visiting wives of those in attendance will be registered free.

Tickets for the Alumni breakfast, the luncheons, the annual dinner and all social activities will be available at the Registration Desk, Mezzanine Floor. Delegates would help the Local Organization Committee by procuring their tickets when registering.

REGISTRAR: Miss Phyllis Lytle, R.N., Director of Public Health Nurses, Department of Public Health.
SIMULTANEOUS TRANSLATION WILL BE AVAILABLE.

TUESDAY, May 31, 8:30 a.m.
Registration—Mezzanine Floor
TUESDAY, 9:30 a.m.
GENERAL SESSION
Old Ballroom

Chairman: J. S. ROBERTSON, M.D., D.P.H., President of the Canadian Public Health Association, Halifax

Addresses of Welcome: The Premier of Nova Scotia, the HONOURABLE R. L. STANFIELD
His Worship the Mayor of Halifax, MR. CHARLES A. VAUGHAN

Presidential Address: JOHN SINCLAIR ROBERTSON, M.D., D.P.H., President of the Canadian Public Health Association, Halifax

10:00 a.m.—"Taking Up The Slack"

Miss D. M. Percy, R.N., Chief Nursing Consultant, Department of National Health and Welfare, Ottawa

10:20 a.m.—"Maternal and Perinatal Mortality Study"

M. G. Tompkins, M.D., Halifax

10:40 a.m.—Medical Care Panel:

Chairman: K. C. Charron, M.D., D.P.H., Director of Health Services, Department of National Health and Welfare, Ottawa

Participants:

Representative, Canadian Medical Association

Representative, Canadian Hospital Association

Representative from Research and Statistics

Representative from Labour

A Senior Public Health Administrator

Representative of the Nursing Profession

12:45 p.m.—Luncheon: Main Dining Room

TUESDAY, 2:30 p.m.
HEALTH EDUCATION SECTION
Salon A

Chairman: DR. JULES GILBERT, Secretary, School of Hygiene, University of Montreal
(A) *Technical Period*

Respective value of centrally-prepared and locally-prepared health exhibits and other teaching aids with reports on the grading of the scientific exhibits displayed at the Convention.
Mrs. A. Senecal (15 min.)
Miss M. Cahoon (15 min.)

Qualifications and training of public health educators for Canada (with special reference to those for use at the local level) Mr. R. Wendeborn (15 min.)
Health Education at Le Pas Mr. G. Crockett (15 min.)

Intermission (10 min.)

(B) *Business Period*
Salary Survey Committee Miss M. Cahoon
Roster of Public Health Educators Mrs. H. Marsh
Election of Officers

TUESDAY, 2:30 p.m.
MENTAL HEALTH AND
PUBLIC HEALTH NURSING SECTIONS
Ballroom

Chairman: ROBERT R. PROSSER, M.D., Director, Mental Health Services, Department of Health and Social Welfare, Moncton, N.B.

2:30 p.m.—PANEL: “Role of Public Health Personnel in a Community Mental Health Program”

Moderator: G. M. SMITH, M.D., D.P.H., Director of the Fundy Health Unit, Department of Public Health, Windsor, N.S.

ERIC CLEVELAND, M.D., Director of Fundy Mental Health Clinic, Wolfville, N.S.

MISS PAULINE MACDONALD, M.S.W., Chief, Department of Social Work, Victoria General Hospital, Halifax

CLARE ROBINSON, M.D., Director of Division of Mental Health, City of Toronto Department of Public Health

MISS BARBARA CHASE, R.N., Child Guidance Clinic, Ontario Hospital, Kingston, Ontario

3:30 p.m.—PANEL: “Behaviour Problems in Children”

Moderator: CLYDE S. MARSHALL, M.D., Administrator, Mental Health Services, Department of Public Health, Halifax, and Associate Professor of Medicine, Dalhousie University

FRANK DUNSWORTH, M.D., Director of Halifax Mental Health Clinic for Children, and Associate Professor of Psychiatry, Dalhousie University

MISS MARJORIE COOK, M.A., Director of Special Services, Halifax City Schools

MISS ELNORA JACKSON, R.N., Department of Public Health, Bedford, N.S.

4:30 p.m.—Business Meeting of the Mental Health Section

TUESDAY, 2:30 p.m.
LABORATORY, MEDICAL HEALTH OFFICERS
AND EPIDEMIOLOGY
Salon E

Chairman: C. E. VAN ROOVEN, M.D., Virologist, Department of Laboratories, Halifax

2:30 p.m.—D. M. MCLEAN, M.D., Virologist, The Hospital for Sick Children, Toronto
“Arthropod-borne Viruses in Ontario, with Special Reference to Powassan Virus”

3:00 p.m.—J. C. SINCLAIR, M.D., F.R.C.P.(C), Department of Medicine, Banting Institute, Ontario
“Studies on Infectious Hepatitis in Uranium Camps at Blind River, Ontario”

3:30 p.m.—“Epidemiological Features—Newfoundland Poliomyelitis Epidemic, 1959”

J. W. DAVIES, M.D., Department of Health, St. John's, Nfld. (Speaker)

D. S. SEVERS, M.D., T. WILLIAMS, M.D., (Co-authors)

Sero Survey—DR. R. L. OZERE, (Speaker) DR. K. ROZEE (Co-author), Department of Medicine and Bacteriology, Dalhousie University, Halifax

Virus Isolation—MISS RUTH FAULKNER, Nova Scotia Virus Laboratory, Halifax

4:10 p.m.—“Poliomyelitis Antibody Response with Single and Multiple Antigens”

R. J. WILSON, Connaught Medical Research Laboratories, Toronto

4:40 p.m.—“Preliminary Observations on the Use of a Trivalent-attenuated Oral Poliomyelitis Virus Vaccine at Halifax”

C. E. VAN ROOYEN (Speaker), DR. R. L. OZERE, MISS RUTH FAULKNER (Co-authors) Department of Bacteriology and Medicine, Dalhousie University, and Nova Scotia Provincial Laboratory

TUESDAY, 2:30 p.m.

DENTAL SECTION

Visit to a Fluoridation Plant—Halifax Water Works

TUESDAY, 2:30 p.m.

MEDICAL CARE SECTION (TECHNICAL)

Salon B or C

2:30 p.m.—“Standards Control”

3:00 p.m.—“Long-stay Patient Care”

3:30 p.m.—“Child Care”

4:00 p.m.—Business Meeting

TUESDAY, 2:30 p.m.

**ENVIRONMENTAL SANITATION
AND VETERINARY MEDICINE SECTIONS**

Chairman: W. J. PHELAN, C.S.I.(C)

2:30 p.m.—To be announced.

3:00 p.m.—“Role of the Laboratory in the Milk Control Program”

D. J. MACKENZIE, M.D., F.A.P.H.A., Director of Laboratories (Public Health) Halifax

3:30 p.m.—“Effect of Improved Sanitation in Communicable Disease Control”

W. R. EDWARDS, B.Sc., M.Sc., Assistant Chief, Public Health Engineering Division, Department of National Health and Welfare, Ottawa (Speaker)
E. W. R. BEST, M.D., D.P.H., Chief Epidemiologist, Department of National Health and Welfare, Ottawa (Co-author)

4:00 p.m.—“Food and Drug Directorate and the Field of Sanitation”

L. B. MACISAAC, B.Sc., Regional Director, Food and Drug Directorate, Eastern Region, Department of National Health and Welfare, Ottawa

4:30 p.m.—“Progress of Spread of Rabies and Measures of Control From the Veterinarian’s Viewpoint”

K. R. AINSLEY, D.V.M., Halifax Veterinary Hospital, Halifax

TUESDAY, 2:30 p.m.

VITAL AND HEALTH STATISTICS SECTIONS

TO BE ANNOUNCED

WEDNESDAY, JUNE 1, 8:00 a.m.

**BREAKFAST OF THE ALUMNI OF THE SCHOOL OF HYGIENE
UNIVERSITY OF TORONTO**

Salon E, Marine Room

**WEDNESDAY, 9:30 a.m.
GENERAL SESSION
Old Ballroom**

Chairman: (To be announced)

9:30 a.m.—“Over-nutrition in Infancy and Childhood”

WILLIAM A. COCHRANE, M.D., F.R.C.P.(C), Associate Professor of Pediatrics, Dalhousie University, Halifax

9:50 a.m.—“Community Psychiatric Services in a Rural Area”

STANLEY RANDS, M.D., Deputy Director, Psychiatric Services Branch, Department of Public Health, Regina, Saskatchewan

**10:20 a.m.—R. J. WEIL, M.D., Assistant Professor of Psychiatry, Dalhousie University
“Psychological and Psychiatric Aspects of Spontaneous Abortion”**

10:40 a.m.—“Field Trials with Oral Poliomyelitis Vaccine”

HERMAN KLEINMAN, M.D., Section of Chronic Diseases, State of Minnesota Department of Health, Minneapolis

11:30 a.m.—“Health Education Seen by a Psychologist”

(Speaker to be announced)

11:50 a.m.—“Alcoholism Research”

(To be announced)

12:10 p.m.—“Poliomyelitis in Quebec, 1959”

A. R. FOLEY, M.D., Dr.P.H., Epidemiologist, Department of Health, Quebec City, Que.

V. PAVILANIS, M.D., Chief, Virus Laboratories, Institute of Microbiology and Hygiene, University of Montreal, Montreal, Que.

GUSTAVE CHAREST, M.D., M.P.H., Epidemiologist, City Health Department, Montreal, Que.

D. KUBRYK, M.D., D.P.H., Medical Consultant, Epidemiology Division, Dept. of National Health and Welfare, Ottawa.

WEDNESDAY, 12:45 p.m.

LUNCHEON MEETING for the Nova Scotia Branch of the C.P.H.A.

Main Dining Room

LUNCHEON MEETING for the New Brunswick-Prince Edward Island Branch of the C.P.H.A.

Salon E

WEDNESDAY, 2:30 p.m.

Old Ballroom

DONALD FRASER MEMORIAL LECTURE—G. D. W. CAMERON, M.D., C.M., D.P.H., Deputy Minister of National Health and Welfare, Ottawa

WEDNESDAY, 3:00 p.m.

Old Ballroom

**HEALTH EDUCATION, PUBLIC HEALTH NURSING AND
NUTRITION SECTIONS**

3:00 p.m.—“Obesity: Emotional and Metabolic Factors”

W. I. MORSE, M.D., F.R.C.P. (C) Associate Professor of Medicine (Research) Dalhousie University

DORIS L. HIRSCH, M.D., (Co-author) Instructor in Psychiatry, Dalhousie University

3:20 p.m.—“Public Education for Emergency”

MISS NOMA TAYLOR, R.N., Nursing Consultant to Civil Defence, Halifax

3:40 p.m.—“Symposium: “Accident Prevention”

Participants: Health Educator—MR. C. SMITH, Department of Health, Saskatchewan

Medical Health Officer—V. K. RIDEOUT, M.D., D.P.H., Director of Western Health Unit, Yarmouth, N.S.

Public Health Nurse—MISS CAROLINE MACDOUGALL, R.N., M.P.H., Department of Public Health, Port Hood, N.S.

Sanitary Inspector—MR. FRED WHITEHOUSE, C.S.I.(C), Department of Public Health, Yarmouth, N.S.

4:40 p.m.—(To be announced)

WEDNESDAY, 3:00 p.m.
MEDICAL CARE AND
VITAL AND HEALTH STATISTICS SECTIONS
Salon E

3:00 p.m.—“Progressive Patient Care”
3:40 p.m.—Medical Care
4:20 p.m.—Paper from Vital and Health Statistics Section

WEDNESDAY, 3:00 p.m.
LABORATORY AND EPIDEMIOLOGY SECTIONS
Salon A

Chairman: IAN CRAIG, M.D., Charlottetown, P.E.I.
3:00 p.m.—“Recent Developments in Antibiotic Therapy”
ARNOLD BRANCH, M.D., D.V.A., Lancaster, N.B.
3:30 p.m.—“Aseptic Meningitis in the Atlantic Provinces—1959”
DR. R. L. OZERE and MISS RUTH FAULKNER
4:00 p.m.—“Current Status of Vaccination Against Tuberculosis”
DR. ARMAND FRAPPIER, University of Montreal
4:30 p.m.—“Typhoid Outbreak in Quebec”
A. DUMAS, M.D., D.P.H., Medical Officer of Health, County Health Unit,
Montmagny, Quebec.
A. R. FOLEY, M.D., Dr.P.H., Epidemiologist, Department of Health,
Quebec City, Que.

WEDNESDAY, 3:00 p.m.
ENVIRONMENTAL SANITATION
AND VETERINARY MEDICINE SECTIONS

3:00 p.m.—Visit to Abattoir

WEDNESDAY, 3:00 p.m.
DENTAL SECTION

3:00 p.m.—Visit to Dalhousie Dental School

WEDNESDAY, 6:30 p.m.
THE PRESIDENT'S RECEPTION
New Ballroom

WEDNESDAY, 7:30 p.m.
ANNUAL DINNER — C.P.H.A.
Dinner Courtesy of the Province of Nova Scotia
New Ballroom

Presiding—J. S. ROBERTSON, M.D., D.P.H.
Presentation of Honorary Life Membership
Introduction of President-elect—BURNS ROTH, M.D., Deputy Minister of Health, Province
of Saskatchewan
Presentation of the Association's Certificate of Office to the Retiring President, J. S. ROBERT-
SON, M.D., D.P.H.

WEDNESDAY, 9:30 p.m.
DANCE
New Ballroom

THURSDAY, 9:00 a.m.
GENERAL SESSION
Old Ballroom

Chairman:
9:00 a.m.—“The Canadian Public Health Association—Business Meeting”
10:00 a.m.—PANEL: “Discussion on Radiation Hazards, Present and Future”
Participants:

- (1) W. J. COOKE, M.D., Radiation Services, Department of National Health and Welfare, Ottawa
"General Program for the Use of Radio-active Materials in Industry"
- (2) MR. J. H. JOHNSTON, Industrial Hygienist, Imperial Oil Limited, Toronto
"Specific Applications of Radio-active Materials for Industrial Purposes and Methods of Effective Control"
- (3) "Evaluation of Cumulative Effects of Radiation Exposure (from all sources)"
(Speaker to be announced)
- (4) "Radiation Hazards from a Genetic Viewpoint"
(Speaker to be announced)

11:30 a.m.—"Stannous Fluoride Topical Application"
JOSEPH CHARLES MUHLER, B.Sc., D.D.S., Ph.D., University of Indiana

11:50 a.m.—"Anatomical Change in the Lung in Relation to Smoking and Lung Cancer"
OSCAR AUERBACK, M.D., Professor of Pathology, Veterans' Administration Hospital, East Orange, N.J., U.S.A.

**THURSDAY, 12:45 p.m.
LUNCHEON
Main Dining Room**

**THURSDAY, 2:30 p.m.
SECTION BUSINESS MEETINGS AS REQUIRED**

Public Health Nursing

**THURSDAY, 3:30 p.m.
TRIP TO PEGGY'S COVE AND HUBBARDS**

Buses will be available

**THURSDAY, 6:00 p.m.
LOBSTER SUPPER — SHORE CLUB, HUBBARDS**

Courtesy of the City of Halifax

**Addendum
LABORATORY AND EPIDEMIOLOGY SECTIONS**

Additional papers to be presented during meeting

1. **A Canadian Study of Mortality in Relation to Smoking Habits, A Preliminary Report**
 - G. H. JOSIE, Sc.D., M.P.H., Principal Research Officer (Biostatistics), Research and Statistics Division, Dept. National Health and Welfare, Ottawa.
 - E. W. R. BEST, M.D., D.P.H., Chief, Epidemiology Division, Dept. National Health and Welfare, Ottawa.
 - C. B. WALKER, B.A., Statistician (Biostatistics), Research and Statistics Division, Dept. National Health and Welfare, Ottawa.
2. **Methodology of Follow-up of Offspring of Women Irradiated During Pregnancy.**
 - D. KUBRYK, M.D., D.P.H., Medical Consultant, Epidemiology Division, Dept. National Health and Welfare, Ottawa.
 - A. C. MCKENZIE, B.A., M.P.H., Epidemiology Division, Dept. National Health and Welfare, Ottawa.
 - G. H. JOSIE, Sc.D., M.P.H., Principal Research Officer (Biostatistics), Research and Statistics Division, Dept. National Health and Welfare, Ottawa.
3. **Poliomyelitis in Canada, 1959.**
 - D. KUBRYK, M.D., D.P.H., Medical Consultant, Epidemiology Division, Dept. National Health and Welfare, Ottawa.

School Health

Conservation of Hearing in Children

C. D. FARQUHARSON,¹ M.B.

HEARING defects in school children are often missed. One reason for the difficulty in recognizing hearing defects is that a deaf child accepts the world as he finds it and is not conscious of his loss. The parents may not notice the difficulty and may believe that the child is not attentive. Even the teachers in school may not be aware of the handicap.

An effort was made to find all children in the local Township schools who suffered from deafness. Several children were found who had been failing in their grades and whose work was improved through their use of a hearing aid. Some were considered to be stubborn children who gave a problem in discipline but it was found that they did not obey because they did not hear what they were asked to do. One child, later found to be deaf, had been considered not capable of being educated and had been sent to a school for the feeble minded.

Modern medical treatment offers so much benefit to the person who is hard of hearing that it is more important than ever to find and treat all children who are handicapped. Help may be given in many ways. Infections may be cured by antibiotics, removal of tonsils and adenoids, or plastic operations may be done on the ears. Sometimes very simple measures may be sufficient, as for example, the removal of wax, better placement in a classroom, or additional speech reading classes. Some children require a hearing aid or an auditory trainer.

The first problem is to find these handicapped children. A nurse was assigned to this duty in the Township schools after having special training in testing hearing both by clinical methods and with an audiometer. In the Township there are

about 35,000 school children and it was planned to test their hearing in groups in the following order: first, those with a known hearing defect or with ear disease, followed by those making poor progress in school or repeating their grades. Those receiving special education, opportunity class or senior academic vocation classes were tested next, and then those giving problems in discipline. Routine annual testing of all children in grades 3, 5, and 7 was also provided. The examination included both a sweep test with an audiometer and a clinical voice test. All children who showed abnormal audiometric readings were referred to their family physician and, where indicated, were referred to an ear specialist by the family physician.

The following case reports are of interest.

Bobby K., age 6. Bobby had a high pitched voice and he was unable to respond in the classroom if he were not near the teacher. He was found to suffer from bilateral nerve deafness, probably congenital. He has learned to lip-read and now participates in his school activities.

Lynne M., age 6. Her behaviour in the kindergarten was not satisfactory because of temper tantrums. She was found to suffer from bilateral nerve deafness, probably due to measles and was provided with a hearing aid. She is now making satisfactory progress in school.

Wendy G., age 12. She had been attending a school for retarded children for the past two years. When tested she was found to have bilateral conductive deafness. It was recommended that the middle ear be explored to see if the condition arising from congenital deformity of the ossicular chain

¹Medical Officer of Health, Department of Health, Township of Scarborough, Ont., with members of his staff: A. M. Breuls, M.D., A. A. Baker, M.D., Jean Deeks, R.N. and Dora Christian, R.N.

could be remedied and if a hearing aid would be helpful. The diagnosis of being severely retarded is refuted by the fact that she has learned to lip-read.

Charles H., age 11. He was not doing well in grade 5 and was a behaviour problem in the classroom. He had a bilateral conductive loss due to large drum perforations. A hearing aid was recommended. Six weeks

after receiving this, his physical condition and his behaviour improved.

Conclusions

Hearing defects in children are more common than might be expected. Those making a special effort to find them will be well rewarded by the improvement in these children.

News Notes

International

In 1958 Americans spent 16.4 billion dollars for medical care—an average of \$95.00 a person. The total represents 5.6% of the \$293 billion spent during the year for all goods and services, according to the American Medical Association's economic research department. The percentage of expenditures compares with 5.8% for recreation and 5.3% paid out for alcoholic beverages and tobacco. Total consumer expenditures for medical care were 4.3 billion for hospitals, 3.9 million for physicians, 3.2 billion for drugs, 1.6 billion for dentists, 1.3 billion for health insurance and ophthalmic products and 1.1 billion for orthopaedic supplies. The remaining \$769,000,000 went for all other medical costs. Of every medical dollar, physicians receive 24¢, dentists 10¢ and drugs 20¢. Of the consumer's dollar—food 23¢, housing 27¢, clothing 11¢, transportation 11¢, tobacco and alcohol 5¢, recreation 6¢, medical care 6¢, and all other expenditures 11¢.

Federal

The Dominion Bureau of Statistics announced preliminary figures for 1959. The death rate was about 8.1 per 1,000 population and the birth rate 27.9. The highest birth rate was in Ontario, followed by Quebec, British Columbia and Alberta. A record 486,000 babies were born in Canada in 1959, 15,882 more than in 1958.

The level of strontium-90 in Canadian milk in September 1958 was 11.9 microcuries per gram of calcium and in 1959, in September, 11.8. One gram of calcium is found in about 1 quart of milk. The maximum permissible is 80 microcuries of strontium-90 per gram of calcium. Strontium-90 would have to be consumed over a lifetime at the maximum level to be dangerous to health. This report was presented to the House of Commons by Health Minister Monteith.

Sixty nurse-educators from Canadian hospital and university schools of nursing

attended a course of instruction arranged by the Department of National Health and Welfare at the Canadian Civil Defence College, Arnprior, Ontario, February 15-19. The course dealt with emergency health services planning in Canada; technical information on the treatment and care of casualties resulting from nuclear, chemical and biological warfare; and discussing and planning for the proper integration of this information into student curricula.

Dr. Robert Kohn, chief of the public health section of the Dominion Bureau of Statistics has been appointed as consultant in public health statistics by the Pan-American Health Organization, serving the health administration of Venezuela and the islands of the Caribbean associated with France, the Netherlands, the United Kingdom and the United States. His duty station will be Kingston, Jamaica.

A new voluntary surgical-medical care plan will go into effect for Canada's civil service. Financed on a 50-50 basis between the government and its staff, it will provide for civil servants and their dependents and the dependents of members of the armed forces and the R.C.M.P. Members of the R.C.M.P. and the armed services are covered under conditions of their service, but the new plan provides for the members of their families. The government contribution is estimated initially at \$11,000,000. Contracts for the insurance are awarded by the government on a tender call to a group of insurance companies. Provided is insurance against 80% of the cost of basic eligible medical expenses, including home, office and hospital calls and against 80% of the surgical expenses beyond the limits set out in the surgical fees. The coverage includes a clause of deductibility of \$25.00 for a single person and \$50.00 for a family for a year. The maximum benefit payable is \$5,000 in any one year, which is also the limit of payment over a life-time.

British Columbia*British Columbia Branch, C.P.H.A.*

The annual meeting of the British Columbia Branch will be held in Victoria on April 21. Presiding at the sessions will be Dr. A. A. Larsen, president of the Branch and the speakers will include Dr. J. S. Robertson, president of the Canadian Public Health Association and Mr. Lorne Brown of the faculty of education, University of British Columbia.

Speaking in the provincial legislature, Hon. Eric Martin, Minister of Health Services and Hospital Insurance, announced that a wide expansion of the home nursing program of the Health Branch would take place this year. This is now in operation in nine areas of the province and the V.O.N. provides service in Greater Victoria, Greater Vancouver and a few smaller centers. The plan is intended to cover an expansion of the V.O.N. home nursing service in those areas presently served by that organization.

Senior and administrative nurses from 50 hospitals in the province attended a four day orientation course on civil defence health services. The course was held in Victoria towards the end of January, and was planned jointly by the Provincial Civil Defence and the Provincial Health Branch. Addresses were heard from representatives of the Department of National Defence, Department of National Health and Welfare, University of British Columbia, Social Welfare Department, Fire Marshal, Mental Health Services, Health Branch and the Provincial Civil Defence organization. A similar course for physicians was held in Victoria between February 22-24, and was attended by 40 general practitioners and the medical health officers of the target and mutual aid areas.

This summer will bring further extension of the preventive dental clinics program. In addition to the areas covered in previous years, clinics sponsored by local agencies will be operated by visiting dentists on the Queen Charlotte Islands and at Telkwa, Houston, Quick and Lasqueti Island.

A new sub-office of the South Central Health Unit has been opened at Merritt; this area was formerly covered from Kamloops.

Dr. Alan Gray has been appointed as regional dental consultant for the three northern health units of Skeena, Cariboo and Peace River. A graduate of the University of Alberta, Dr. Gray was in private practice at Lethbridge before taking up his new post. He will operate out of Prince George.

Mr. Archie Shearer, formerly assistant director of the Division of Laboratories of the Provincial Health Branch has resigned to

accept an appointment with British Drug Houses (Canada) Ltd. in Vancouver.

Dr. Edwin Stockdale, assistant director of the Central Vancouver Island Health Unit at Nanaimo, has resigned to take up private practice.

Saskatchewan

The Sanitary Engineering Division, Saskatchewan Department of Public Health, held a course for water treatment plant operators March 2-7. This was the sixth consecutive year such a course has been presented and that interest in it remains high, was indicated by a pre-registration of 45 operators. The course work was divided into first, second and third year sessions with three days allotted to each and the second and third year lectures running concurrently. In addition to the department staff members, visiting lecturers from Saskatoon, Winnipeg and Vancouver presented the course material.

The Western Canada Water and Sewage Conference is planning a correspondence course in water and sewage treatment. It is expected that this may eventually supplant the annual short course sponsored by the Department of Public Health.

Regional nursing supervisors of the Department of Public Health recently attended a workshop in Regina. The leaders were Misses Mary Edwards, D. M. Hopkins, Mary Earnshaw, Louise Miner, Mesdames M. B. Glennon, Hester Kernen and Edith Dixon. Topics included were supervision, psychology of supervision, principles of administration, supervision of university student nurses, evaluation as a supervisory function, planning for supervision, and library facilities.

At the present time there are four regional nutritionists with the Saskatchewan Department of Public Health. Miss Donna White is with the Prince Albert Health Region and Miss Marie Dunn with the Weyburn-Estevan Health Region. Mrs. Julie Cichon Dudley, formerly regional nutritionist in the Prince Albert Health Region, was recently appointed to the North Battleford Health Region with headquarters in Lloydminster. Mrs. Isabel Yandel Barker has been appointed regional nutritionist in the Regina Rural Health Region with headquarters in Regina.

Dr. T. E. Hunt, College of Medicine, University of Saskatchewan, Saskatoon, was elected president of the newly organized Co-ordinating Council on Rehabilitation (Saskatchewan) at a conference of more than 40 voluntary and government agencies held at Saskatchewan House, Regina, late in January. Dr. A. E. Buckwold, representing the Saskatchewan Council for Crippled Children and Adults, was named president-elect.

Miss Orpha Yonge, Reg. N. has been appointed nursing supervisor in the new Humboldt-Wadena Health Region.

Dr. Elizabeth J. Ives, lately from Surrey, England, has been appointed assistant medical health officer in the North Battleford Health Region.

Dr. Elizabeth C. Nelson, formerly assistant medical health officer in the Yorkton-Melville Health Region, has been appointed assistant medical health officer in the North Battleford Health Region.

Dr. P. T. Prestage, medical health officer of the Yorkton-Melville Health Region, has resigned to engage in private practice.

Alberta

Alberta's Poison Control Service recently started to operate, with its headquarters in the Provincial Department of Public Health. A poison treatment center has been established in the emergency service of every active treatment hospital; each of these centers is equipped with a card-wheel file which contains information on some 2,400 poisonous preparations in common use. In addition, two poison information centers have been set up, one at the University Hospital in Edmonton, the other at the Calgary General Hospital, where particulars are held concerning some 5,000 preparations, and where there is also a reference library. It is believed that Alberta is the first province to have made information on poisons readily available at all hospitals.

Dr. E. S. Engen (a graduate of the University of Manitoba) has been appointed Medical Officer of Health with the Vegreville Health Unit in place of Dr. L. W. Mackey, who transferred last September to the Athabasca Health Unit.

Manitoba

Dr. J. A. Dupon, D.P.H., formerly medical health officer, St. Boniface, Manitoba, has been appointed medical director of the Grey Nuns' Hospital in Regina, a newly created position. Dr. Dupon had served in St. Boniface since 1936.

Ontario

The government of Ontario has announced the appointment of Mr. Robert H. Winters as chairman of the board of governors of the new York University in Toronto. Mr. Winters is well known in business and industrial life. York University will be affiliated with the University of Toronto for a minimum of four years. The announcement of the appointment of Dr. Murray G. Ross, as president was made a few months ago. York University will begin its life in September 1960 in the University of Toronto's Falconer Hall at 84 Queen's Park. In its early years it will provide only a general arts faculty.

An announcement has been made by the Ontario government that a new psychiatric hospital will be built in Toronto to replace the present hospital which has been in operation since 1932. A 240-bed hospital is planned to be erected at a cost of \$6,000,000. It will be known as the Provincial Psychiatric Hospital and Institute. It will have both a children's and adults' out-patient wing and a forensic clinic which will look after cases referred by the courts and social agencies. There will also be a day and night psychiatric clinic open to the public. The University of Toronto will operate the Institute part of the hospital which will be used for psychiatric research and teaching.

An announcement has been made that the Department of Health will press for expansion of nursing aid training in Ontario's fifteen mental hospitals. Seven public general hospital training schools are now training such assistants and five other large hospitals are interested in the program.

A day and a half seminar course for physicians was held at the Alcoholism Research Foundation's Toronto clinic in November. It was sponsored by the Foundation and the College of General Practice of Canada.

A new laboratory for research into radioactive fallout is being built for the Division of Industrial Hygiene of the Department of Health as an addition to the Central Laboratories at 320 Christie Street, Toronto.

Two residential centers for the study and treatment of chronic drunkenness are planned by the Attorney-General's department. The two centers will handle about 600 cases a year and are designed as pilot projects. About 21,600 persons, more than 90% of them male, pass through the Ontario courts each year on charges of drunkenness and of this number 6,400 are considered chronic offenders, having three or more convictions within twelve months.

Dr. Keith J. R. Wightman, head of the Department of Therapeutics, faculty of medicine, University of Toronto, has been appointed professor of medicine to succeed Dr. R. F. Farquharson at the end of the academic session as the Sir John and Lady Eaton Professor of Medicine. He will also be in a senior position in the Toronto General Hospital.

David W. Ogilvie, a former director of the Ontario Blue Cross Plan has been appointed general manager in the Ontario Hospital Services Commission.

Miss Bessie Touzel, distinguished Canadian social worker, received Toronto's highest honour, the Award of Merit Medal. Miss Touzel is executive director of the Ontario Welfare Council.

The Third Annual Refresher Course, School of Hygiene, University of Toronto, was held Feb. 8-10 with 53 persons in attendance. Medical officers from Ontario, Quebec, Nova Scotia, and Saskatchewan attended as well as representatives of the federal and provincial departments. A number of hospital administrators also participated. Speakers from outside Toronto were Prof. E. G. D. Murray, University of Western Ontario, Prof. Hugh R. Leavell, Harvard School of Public Health, Dr. Hugh Starkey, Department of Veterans' Affairs, Montreal, and Dr. Gordon Josie, Department of National Health and Welfare, Ottawa.

It is planned to hold the Fourth Annual Refresher Course in the School of Hygiene, Feb. 6-8, 1961.

Quebec

Miss Lenore Duggan, Reg. N., assistant director, School of Nursing, St. Mary's Hospital, Montreal, has been appointed professor of health education at St. Joseph's Teachers' College, Montreal.

Nova Scotia

The School of Nursing, Dalhousie University, has announced the establishing of a new diploma course in nursing service administration for head nurses, supervisors and junior administrators in hospitals and public health agencies. It is a general course extending over a period of approximately nine months.

The Sydney Dustfall Survey has been expanded to include items other than dust and now constitutes an atmospheric pollution survey. Four smoke samplers have been installed and it is anticipated that additional equipment will be put in service within a few months. The survey is conducted jointly by the Department of National Health and Welfare, the Department of Health of Nova Scotia, the city of Sydney, and by Dominion Steel and Coal Company.

The School of Nursing, Dalhousie University, Halifax held a three-day institute on nursing aspects in the mental health program in February at the Victoria General Hospital. The conference leaders were Miss P. C. Pike, head of the psychiatric nursing research department, Allan Memorial Institute, Montreal and Dr. Robert O. Jones, professor of psychiatry, Dalhousie University. The following attended: Miss Ruth Anderson, Sydney Mines, Miss Patricia Thomas, Port Hawkesbury; Miss Miriam Pineau, Truro; Miss Irene Stafford, Liverpool, Miss Lillian Grant, Antigonish; Mrs. Constance Horsfall, Anna-

polis Royal; Miss Mary Marshall, Dartmouth, Miss Cecile Amirault, Yarmouth; and Miss Phyllis Lytle, Halifax.

Dr. Freeman O'Neil, of Sydney, was honoured by the Nova Scotia Branch, Canadian Public Health Association at the annual convention as an emeritus member. As medical officer for the last 58 years, Dr. O'Neil is the dean of Canadian medical health officers.

Dr. Joseph E. Hiltz, medical director, Nova Scotia Sanatorium Kentville, was honoured recently, being made an officer brother of the Most Venerable Order of the Hospital of St. John of Jerusalem.

Dr. Harold L. Stammell was appointed recently executive director of the Alcoholism Research Commission for Nova Scotia.

Miss Mary Logan, Port Wallis, and Miss Effie MacLeod, Aberdeen, Inverness County, recently joined our staff for a period of inservice training before going to University in the Fall. Their headquarters are Armdale and Antigonish, respectively.

Mrs. Lois Clarkin, R.N., Public Health Nurse, joined our staff in Dartmouth.

The following public health nurses attended an institute February 8-19 in Moncton, N.B. under the auspices of the School of Nursing, University of New Brunswick: Miss Anna Duff, New Glasgow, Miss Jessie McCann, Truro; Mrs. Elsie Percy, Sydney and Miss Edna Walsh, Halifax. The Institute was on maternal and infant care.

New Brunswick

A nursing institute was held in Moncton from February 8-19 on maternal and infant care, under the auspices of the School of Nursing, University of New Brunswick.

Prince Edward Island

On the occasion of the civic election held recently, fluoridation of the municipal water supply (in Charlottetown) was rejected by a narrow margin of 27 votes. There were 1,540 negative votes and 1,513 in favour. The medical and dental professions gave unanimous and enthusiastic support to the series and an excellent educational program was conducted.

Newfoundland

A successful campaign has been conducted to raise \$350,000 by public subscription toward the cost of building the new Central Newfoundland Hospital at Grand Falls. The estimated cost is \$2,000,000 and provision will be made for 130 beds.

Books and Reports

HEALTH EDUCATION IN THE ELEMENTARY SCHOOL, Helen Norman Smith and Mary E. Wolverton, *The Ronald Press Company, New York, 1959, 315 pp., \$4.50.*

Helen Norman Smith is professor of physical and health education, University of Cincinnati and Mary E. Wolverton is assistant professor in the same department of the University of Cincinnati. This is a practical text for students and in-service teachers and supervisors. It is a thorough presentation of the principles and methods of effective health teaching in the first six grades. It is written for college students preparing to teach in the first six grades as well as for classroom teachers and supervisors who plan and conduct programs in health education for these grades. It is a practical book showing how to instruct the growing child so as to instil in him a knowledge of the requirements for health. In a section entitled "School Health Education Units" eighteen sample teaching units for grades 1 through 6 are provided. These are tested units representative of the main areas of health instruction. Each unit concludes with the teacher's appraisal of the results with critical comments by the authors. Six additional units pertain to dental health and nutrition. The book merits wide use in the improvement of instruction in health education in our elementary schools.

FOOD AND YOU. Edmund Sigurd Nasset, B.A., M.S., Ph.D. *Barnes & Noble, Inc. New York, 1958, 166 pp., \$1.25.*

This small volume is No. 201 in the Everyday Handbook Series which provides summaries of important subjects. The author is professor of physiology, School of Medicine and Dentistry, University of Rochester. The object of the author is to present the story of food and its transformations in the body in a factual, non-technical manner. Brief accounts of new developments in the

science of nutrition have been introduced. In the appendix a table of food compositions is supplied which is extensive enough to permit the calculation of the nutrient content of most diets. A sample low calorie diet is given as a guide to those who wish to plan their own diet. This is a small practical book which can be heartily recommended.

WATER SUPPLY FOR RURAL AREAS AND SMALL COMMUNITIES. E. G. Wagner and J. N. Lanoix, *World Health Organization, Monograph Series No. 42, Ryerson Press, Toronto, 1959, 340 pp., \$6.75.*

This monograph deals specifically with the problem of water supply for rural areas and small communities, particularly in countries where lack of resources makes it difficult to assure a safe water supply for most of the population. Part I deals with the planning of a water supply project, Part II with the installation of various types of water supply systems and Part III with the management of water supply systems. The nine annexes give much useful construction data.

VOCATIONAL REHABILITATION FOR THE PHYSICALLY HANDICAPPED, Louise M. Neuschutz, *The Ryerson Press, Toronto, 1959, 136 pp., \$6.25.*

Mrs. Neuschutz has contributed several books relating to handicapped persons. This book is intended as an aid to the physically handicapped, including the home-bound, their families, as well as to employers, personnel managers and welfare workers. It aims to show that a physical handicap need not be a work handicap. It should find a useful place for the handicapped individual and it opens to him new fields of opportunity.

It is a penetrating study of occupations which various types of physically handicapped and aged can pursue in commerce, industries or in small businesses of their own.

